The Iron Age

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXV: No. 11. *New York, Thursday, March 11, 1880.* *$4.50 a Year, Including Postage. Single Copies, Ten Cents.*

Gas Firing for Steam Boilers.

In no country, probably, has necessity enforced a closer economy of fuel and a better utilization of inferior grades of combustibles than in Germany, and it is natural that there engineers and manufacturers should at an early period turn to gas firing as a means of reducing the cost of generating steam, especially since numerous applications in metallurgy held out promise of success. It was soon found that the heating of the air of combustion and the simultaneous cooling of the side walls of the producer were important elements, and that a point carefully to be considered was the thorough admixture of the air and gas at the proper point consistent with a due regard for the durability of the furnace. A very interesting series of experiments in this direction were made recently by Herr Haupt, of Brieg, whose apparatus are shown in the accompanying illustrations. The plant first adopted and tried by him was that shown in Figs. 1, 2 and 3, in which G represents the producer, having a charging hopper, A. The air for this producer was furnished by a Koerting injector, a system meeting with much favor on the Continent. This air was heated to an average temperature of 190 degrees, by being passed through pipes built into the walls of the producer and the boiler, as shown in the drawings. It will be seen that the gases, passing by the valve *v*, Fig. 1, through the flue *c*, swept by the fire-brick arches *z z*, Figs. 1 and 3, and mixing with the air coming in from the side, turned into a small mixing chamber, from which they issued and ignited at the points *a a*, Figs. 1 and 3. Herr Haupt found by experiment that the distance between this point of ignition and the boiler affected the results very materially, the most favorable distance being about 24 inches. It was noticed that the arrangement shown in Fig. 3 (see page 3), of allowing the air to come from one side only, was unsatisfactory, as it did not admit of as thorough a mixture of air and gas as was desirable. The construction was modified, as shown in Fig. 6 (see page 3), and it was observed that the maximum temperature was generated near the points *a a* (Fig. 6), and that at *b b*, the temperature had fallen to about 1770° F. This fact accounts for the durability of the fire-brick arches, as well as for the immunity of the bottom of the boiler from injury. A good deal of trouble was, however, met with in the management of the producer, particularly as it only worked, at most, for three days with any single description of coal, the quality of the coal being then changed in order that another variety might be experimented with. If very bituminous coal were used the whole mass fused together in the producer, and was only broken up with very great difficulty; if the coal were very small it produced little gas, and the blast had to be increased, which often cut air-ways through the mass and caused partial explosions.

The maximum evaporations were 8.5 lbs. to 9 lbs. of water per pound of coal, and the minimum, 5 lbs. to 6 lbs., the actual evaporations being reduced to their equivalents, which would have been obtained had the water been boiled off at atmospheric pressure, and the temperature of the feed been 32° F. The greatest difficulty was, however, found in lighting the gas and getting under way at starting. This was done by inserting a torch into the hole of Figs. 1 and 2, but, notwithstanding the great care used in doing so, partial explosions took place several times; so the whole arrangement of separate producer was abandoned, as those responsible for the safety of the boiler, which was working at a pressure of 90 to 105 lbs. per square inch, hesitated to continue the experiments under the circumstances.

In order to arrive practically at the best form and proportions for the producer in its new and simpler type, an experimental furnace embodying some new features was built, the bottom of the fire arch being kept at a distance of about 2 feet above the grate level. Several different kinds of fuel were tried, some containing as much as 50 or 60 per cent. of ash, as well as the mud remaining in the coal-washing machines; but even with these very unfavorable fires it was impossible to choke the furnace. These results were considered so promising that the separate producer shown in Figs. 1 and 2 was taken down, and replaced by that shown in Figs. 4 and 5, all the necessary alterations having been carried out by four bricklayers in three days. After the alterations were completed, it was found possible, when firing with gas, to evaporate 1½ lbs. to 2½ lbs. more water per pound of coal than had been evaporated when the boiler was fired in the ordinary way; it was also observed that the boiler was capable of generating twice the weight of steam obtained formerly. In a trial carried on for 11 hours, the coal-fired boiler evaporated about 11,000 lbs. of water, at a pressure of 90 lbs. to 105 lbs. per square inch, the feed temperature being 50° F. The total heating surface exposed was 450 square feet, or, say, 2325 lbs. of water evaporated per hour per square foot of heating surface. Under similar conditions the gas-fired boiler evaporated from 20,000 lbs. to 23,540 lbs. of water, or say, from 4.41 lbs. to 5 lbs. of water per square foot of heating surface per hour, and even at this high rate of evaporation the temperature in the flue leading to the chimney never exceeded 662° F. The most rapid evaporation possible to produce with the coal-fired boiler was 19,250 lbs., but the temperature of the escaping gases then rose to 932° F., and the evaporation of water per pound of coal diminished to 6 lbs. to 6½ lbs. The temperature at W in Fig. 5 was found, by a Weinhold pyrometer, to be 2306° F., which is considered to be much below that often locally generated under boilers fired in the ordinary way. This, and the almost perfect uniformity of the heat produced, are the principal causes of the moderate wear and tear which takes place in the boilers and in the fire-brick arches. The remarkable simplicity of these furnaces and the results obtained with them are strong points in favor of their adoption. It should not be forgotton, however, that many of the small details, such as the dimensions of the producer, the diameter of the air pipes, pressure of blast, &c., must be varied to suit the requirements of each locality, and that therefore a close copy of Herr Haupt's design is by no means necessarily the best.

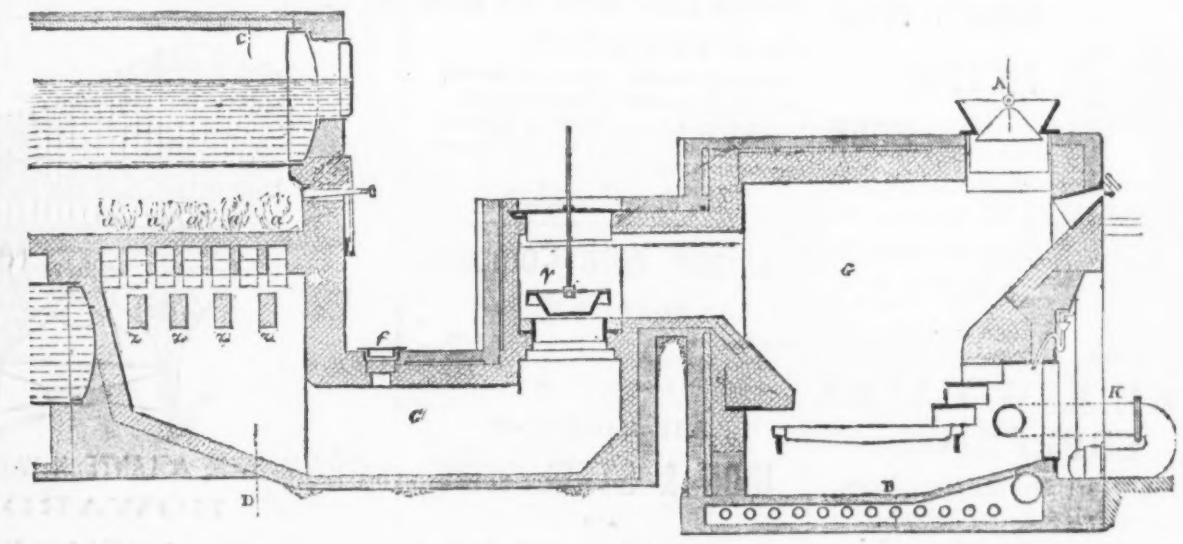


Fig. 1.—Vertical Section of Gas Producer.

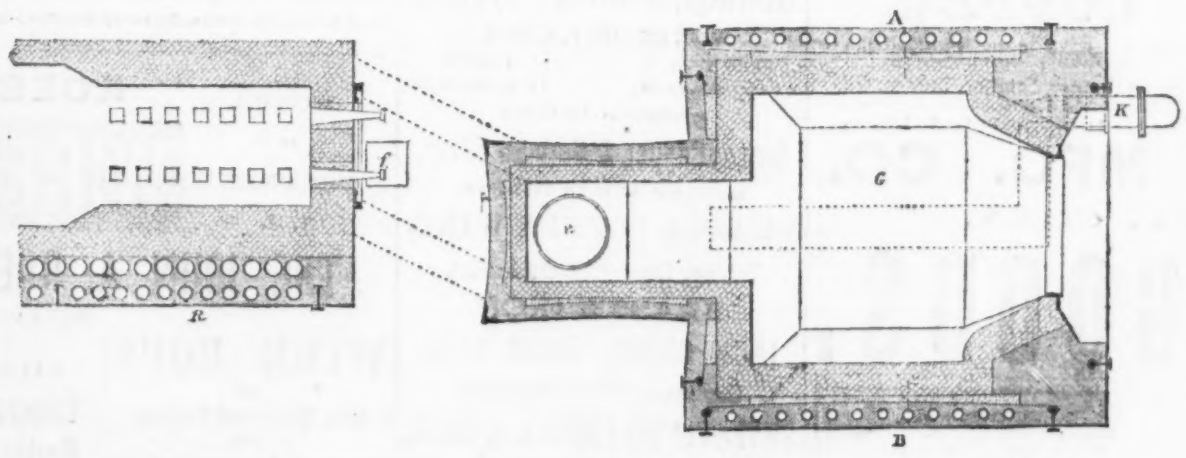


Fig. 2.—Horizonal Section of Gas Producer.

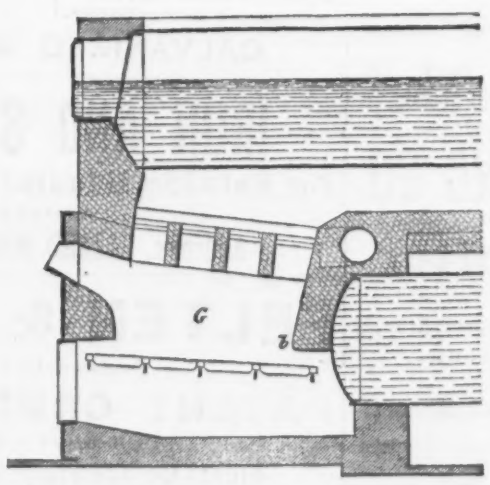


Fig. 4.—Vertical Section of Boiler.

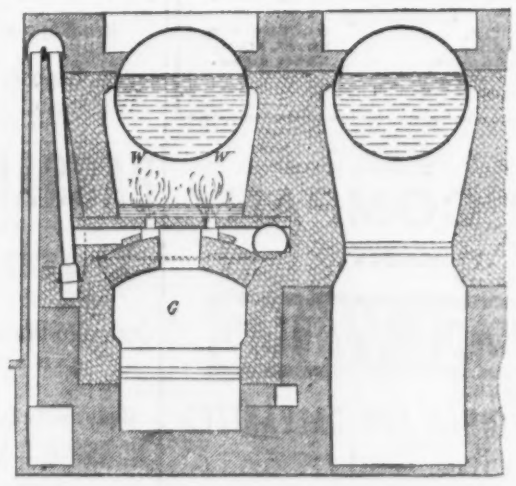


Fig. 5.—Cross-Section of Boiler.

RECENT GERMAN DESIGNS OF BOILERS FIRED WITH GAS.

Strikes in Massachusetts.—The report of the Massachusetts Bureau, which has just been published, furnishes some valuable information about strikes in a State where manufacturing of various kinds is so extensively carried on. It chronicles 159 strikes, of which 59 were in cotton or woolen mills and 34 in the shoe trade. Thirty-two of the strikes were among native operatives, and the remaining 127 either among foreign operatives or those of unknown nationality. As to the result, 119 failed completely; 16 were compromised, six partially succeeded, and 18 entirely succeeded—that is, the absolute failures were nearly seven to every absolute success. This is not very encouraging to strikers; but the proportion given in Massachusetts is larger than it usually is, the general fact being that only one out of ten strikes achieves its aim.

SCIENTIFIC AND TECHNICAL.

Mr. Robert Gill, writing to the *Engineer*, describes

A PRESSURE GAUGE FOR SMALL PRESSURES,

which he devised in order to measure furnace drafts. The apparatus consists simply of a fine horizontal tube, ending in two larger vertical legs, one of which may be connected by flexible tubing with the space of the gas the pressure of which is sought. In the horizontal tube, fitted with a fluid, is a small gas bubble, which naturally travels a certain distance from the middle line of the tube when the pressure in one leg is lower than in the other. If the tube be one-twelfth of an inch in diameter and the legs half an inch, the indicating bubble will travel over a distance 36 times greater than that through which the water moves in the leg. A scale permits easy measurement of the exact distance. Water mixed with spirits of wine was found by Mr. Gill to give good results.

The following interesting letter, written by the famous George Stephenson on the 15th of October, 1847, is cited as establishing the claim of Mr. Sydney Smith, of Nottingham, England as

THE INVENTOR OF THE STEAM GAUGE.

"A most important invention has been submitted to me for my approval, patented by a Mr. Smith, of Nottingham, and intended to indicate the strength of steam in steam engine boilers. It is particularly adapted for steamboats, and can be placed in the cabin, on deck, or any part of the vessel, where it may be seen by every passenger on board. It may also be fixed in the office of every manufactory where a steam engine is used at a considerable distance from the boiler. I am so much pleased with it that I have put one up at one of my own collieries. It is some distance from the boiler—in another house—and works most beautifully, showing the rise and fall of the steam in the most delicate manner. The indicator is like the face of a clock, with a pointer, making one revolution in measuring from 1 pound to 100 pounds upon the square inch of the pressure of steam. It is quite from under the control of the engineer, or any other person, so that its indications may be relied upon, and the construction is so simple that it is scarcely possible for it to get out of order. I might give a full explanation of the machine, but I think it best to leave that to the inventor himself. The numerous and appalling accidents which have occurred from the bursting of steamboat boilers have induced me to give you these observations, which I think desirable to be laid before the public. I may state that I have no pecuniary interest in the scheme, but being the first person to whom it has been shown, and the first person to make use of it, I feel it a duty I owe to the inventor, as well as to the public, to make it as universally known as possible. The indicator is put up at Tapton Colliery, near Chesterfield, and may be seen any day by any respectable person."

Mr. Gramme, the well-known French designer and builder of dynamo-electric machines, has recently brought out

AN IMPROVED DYNAMO-ELECTRIC MACHINE,

illustrations of which are published in the *Revue Industrielle* by M. Hippolyte Fontaine, an authority on the electric light. The construction of the machine, which has some special points of interest, is as follows: Two round, cast-iron frame plates, firmly connected by bolts and provided with bearings for the main shaft, are bolted down to a cast-iron foundation plate. One of these frame plates has a wide, circular, inner flange, upon the inside of which the four electro-magnets of the exciting apparatus are mounted. The six rotating electro-magnets are fixed radially around a hexagonal sleeve, which is attached to the shaft by bolts, to which the armature is fastened also. The shaft carries at one end the small exciting coil and on the other the induction coil, the one creating a continuous and the other alternating currents. The method of coiling the wires differs slightly from that adopted in the other machines, as instead of winding one wire, two are coiled, in order to obtain tension currents for small lights or quantity currents for large ones. For regulating the power of the machine a copper wire, the length of which may be varied, is introduced between the exciting bobbin and the electro-magnets. During a number of experiments made with the two sizes manufactured until now, the following results were obtained:

Revolutions per Minute.	Power. Foot Pounds.	No. of Lights.	Intensity. Each Light. Carcel Burners.
1,140	1,049	2	45
1,200	1,475	4	47
1,330	2,387	6	44
1,400	2,748	8	42
1,440	2,546	12	25
1,350	2,244	8	38
1,300	2,076	6	37.5
1,300	2,416	6	50.2
1,460	2,720	8	47.2
1,000	2,720	16	48.0
1,020	2,720	20	51
1,200	2,720	25	31.5

The cost of the machinery is stated to be reduced by one-half when compared to the prices prevalent two years since, while the carbons employed last longer now and are sold at lower figures.

According to the *Comptes Rendus*, a series of experiments, conducted by M. Tresca, was made on

THE TRANSMISSION OF POWER BY ELECTRICITY,

with Gramme machines, which, it will be remembered, were tried about a year since in France for plowing. These, it appears, were continued with a double Brabant plow, making a furrow 241 yards long. The velocity of the plow, when the circuit of the current was 875 yards, was 34.6 inches per second, the shaft making 1123 revolutions per minute; when the circuit was increased to 1422 yards, the velocity was increased to 27.56 inches and the revolutions of the shaft to 890. The effective work was estimated at 3 horse-power.

In a recent number of the *Technologiste*, M. Violle gives the results of experiments made with improved apparatus to determine

THE MEI ING POINT OF SOME METALS.

The figures eached by him are the following: Silve. 1749° F.; gold, 1863°; copper, 1890°; platinum, 3195°; iridium, 3510°. Pure copper, it will be seen, melts at a higher temperature than gold, while ordinary commercial copper fuses below 1035°.

Dr. Granville Cole has drawn attention, in a paper read before the British Society of Arts, to

A NEW METALLIC COMPOUND,

which he states possesses properties that are likely to make it valuable in many branches of the arts. It was discovered some time since, by J. Berger Spence, that the sulphides of metals, combined with molten sulphur, form a liquid, which on cooling becomes a homogeneous mass of dark gray color and possessing great tenacity, while it is not affected by the atmosphere, and resists acids and alkalies well. It has a comparatively low melting point, 320° F., and expands in cooling so that it fills molds very accurately, so well indeed that the marks of a finger on a plate of glass are reproduced. Experiments are being made to test its adaptability for printing and stereotyping purposes, and casts from gelatine molds have been made without destroying them. It has been tried by the South Metropolitan Gas Works for joining gas pipe, with such success, as regards the tightness of the joint and the ease and rapidity with which it is applied, that it has been adopted by the engineer of that corporation. Over lead it has the advantage of being much cheaper and of doing away with caulking, while its property of being a bad conductor of heat suggests other important uses. For the specimens exhibited iron pyrites, containing lead and zinc, were used, the material obtained being capable of receiving a polish. Various colors, such as the patina of bronze, the dark blue of steel and the appearance of silver and gold have been imparted to it; so that there is some promise of its being available for the reproduction of works of art.

Herr Krupp's estimate for steel girders for the Forth bridge is 15 per cent. lower than the lowest estimate from any other firm, British or foreign. The saving by the use of German steel is £30,000. The specifications require that the girders shall be delivered at South Queensferry.

Metals.

ANSONIA
BRASS & COPPER CO.,
No. 19 Cliff Street,
Phelps Building, NEW YORK.
MANUFACTURERS OF
BRASS AND COPPER
IN
Sheets, Bolts, Rods, Wire, &c.
Seamless Brass & Copper Tubing.
Ansonia Corrugated Stove Platforms.
PURE COPPER WIRE
For Electrical Purposes, Bare and Covered.
Phosphor Bronze Rods for Pumps, &c.
ANSONIA ★ REFINED
INGOT COPPER.

PHELPS, DODGE & CO.
IMPORTERS OF
TIN PLATE,
ROOFING PLATE,
Sheet Iron, Copper, Pig Tin, Wire, Zinc, &c.
MANUFACTURERS OF
COPPER AND BRASS.
CLIFF STREET, NEW YORK.

SCOVILL MFG CO
BRASS,
HINGES, WIRE, GERMAN SILVER.
PHOTOGRAPHIC GOODS.
BUTTONS,
CLOTH AND METAL.
DEPOTS, 419 & 421 Broome St., N. Y. 177 Devonshire St., Boston. 183 Lake St., Chicago.
FACTORIES, Waterbury, Conn. New Haven, Conn. New York City.

DICKERSON, VAN DUSEN & CO.,
Importers of
Tin Plate, Pig Tin, Sheet Iron, Copper, Wire, Zinc, Etc.
29 & 31 Cliff St., cor. Fulton,
DICKERSON & CO., Liverpool. NEW YORK.

Established 1837. Incorporated 1876.
WATERBURY MFG. CO.,
WATERBURY, CONN.
BRASS GOODS.

N. & G. TAYLOR CO.,
Philadelphia.
ESTABLISHED 1810.
Manufacturers, Importers and Dealers, Wholesale and Retail, in all kinds of
TIN PLATES.
A specialty for sizes used in the manufacture of
Cheese Vats, Cream Pans, Milk Cans, Cotton Cans, &c.
N. & G. TAYLOR CO.
Can make any size
Sheet Tin, Sheet Zinc, Sheet Copper, Sheet Brass, Roofing Tin, Sheet Iron, Sheet Lead.
Send for our special prices and list of sizes.

ABRAM S. HEWITT, President. WM. HEWITT, Vice President.
JAMES HALL, Treasurer. E. HANSON, Secretary.
THE
TRENTON IRON COMPANY,
(INCORPORATED 1847),
TRENTON, NEW JERSEY,
MANUFACTURERS OF
IRON and STEEL WIRE
OF ALL GRADES,
BRIGHT, ANNEALED, COPPERED, TINNED AND GALVANIZED;
Iron and Steel Wire Rods;
EXTRA QUALITIES OF BAR IRON AND RODS.
Best Qualities of Gun-Screw and Charcoal Iron Wire;
Crucible, Siemens-Martin and Bessemer Steel Wire.
Wire Straightened and Cut to Lengths.
Represented in New York by COOPER, HEWITT & CO., 17 Burling Slip.

BRODERICK & BASCOM,
MANUFACTURERS OF
IRON WIRE ROPE. **STEEL WIRE ROPE.**


800 N. Main St., St. Louis, Mo.

Metals.


Waterbury Brass Co.
CAPITAL, - - $400,000.
Sheet, Roll and Platers' Brass,
GERMAN SILVER,
Copper, Brass and German Silver Wire,
BRASS AND COPPER TUBING,
COPPER RIVETS & BURS,
BRASS KETTLES,
Door Rail, Brass Tags,
PERCUSSION CAPS,
POWDER FLASKS,
Metallic Eyelets, Shot Pouches, Tape Measures, &c.
And small Brass Wares of every Description.
Cartridge Metal in Sheets or Shells a Specialty.
Sole Agents for the
Capewell Mfg. Co.'s Line of Sporting Goods and Wood's Paper Shot Shells.
DEPOTS: 296 Broadway, New York. 189 Eddy St., Providence, R. I.
Mills At WATERBURY, Conn.


BROWN'S PATENT PICTURE HOOK.
Warranted to hold 100 lbs.
Manufactured only by
Manhattan Brass Co.,
1st Ave., 27th to 28th St.,
New York.
Solid brass, price, $4 per gross, less 25 % discount.

THE NEW HAVEN COPPER CO.,
255 Pearl Street, New York.
Manufacturers of and Dealers in
Braziers' & Sheathing COPPER.
Kettle Bottoms, Bolts, Circles, Rivets, Ingot Copper, Spelter, Solder, &c.

Metals.

The Plume & Atwood Mfg. Company,
MANUFACTURERS OF
SHEET and ROLL BRASS and WIRE,
German Silver and Gilding Metal,
Copper Rivets and Burs,
Kerosene Burners,
Lamp Trimmings, &c.
80 Chambers Street, New York.
13 Federal Street, Boston.
109 Lake Street, Chicago.
Rolling Mill, THOMASTON, Ct. Factories, WATERBURY, Ct.

Bridgeport Brass Co.,
MANUFACTURERS OF
Sheet and Roll Brass,
Brass & Copper Wire & Tubing,
German Silver Metal and Wire,
Copper and Iron Rivets.
OILERS and CUSPADORES, LANTERNS and TRIMMINGS, Clocks & Fly Fan Movements.
LAMPS and TRIMMINGS, KEROSENE BURNERS, PLUMBERS' MATERIALS.
Particular attention paid to cutting out Blanks and manufacturing Metal Goods.
MANUFACTORY, *Bridgeport, Conn.* WAREHOUSE, *19 Murray St., N. Y.*

Harrison Wire Company,
ST. LOUIS, MO.
THOS. W. FITCH, Prest. and Treas. CHAS. FISH, Secretary.
MANUFACTURERS OF
All kinds of
IRON & STEEL WIRE
AND
Wire Mill Specialties.

Holmes, Booth & Haydens,
WATERBURY, CONN.
NEW YORK, 49 Chambers St. BOSTON, 18 Federal St.
Manufacturers of all kinds of
Brass, Copper & German Silver,
ROLLED AND IN SHEETS.
BRASS & COPPER WIRE,
Tubing, Copper Rivets & Burs.
BRASS & IRON
JACK CHAIN, DOOR RAIL.
German Silver Spoons.
SILVER PLATED FORKS & SPOONS,
Kerosene Burners, &c.

JOHN DAVOL & SONS,
Agents for
Brooklyn Brass and Copper Co.,
Dealers in
Ingot Copper, Spelter, Lead, Tin, Antimony, Solder & Old Metals.
100 John Street, N. Y.

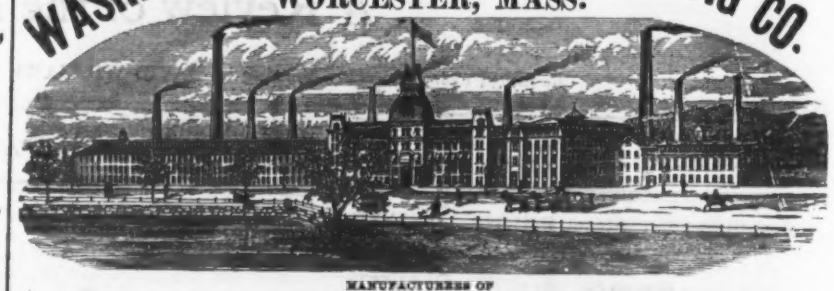
PASSAIC ZINC CO.
Manufacturers of
Pure Spelter
FOR
Cartridge Brass, Gas Fixtures, Bronzes
AND ALL FINE WORK.
Also for
Galvanizers & Brass Founders.
MANNING & SQUIER, Gen'l Agents
113 Liberty Street, N. Y.

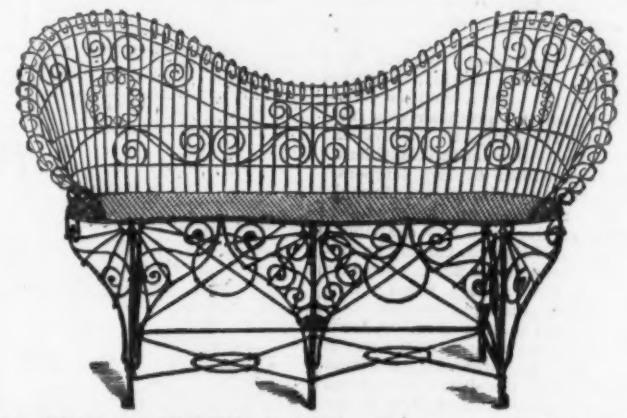
Geo. W. Prentiss & Co.,
HOLYOKE, MASS.,
MANUFACTURERS OF
IRON WIRE.

Bright, Coppered, Annealed and Tin Plated. Also GUN SCREW WIRE.
Of all sizes straightened and cut to order.

W. T. WELLS,
Sole Agent for Foxell, Jones & Co., manufacturers of
HOLLOW WARE,
and Broker in
PIG IRON,
78 Beekman Street, New York City.

Wire, etc.

PHILIP L. MOEN, President & Treasurer. CHAS. F. WASHBURN, Vice-President & Sec'y
WASHBURN & MOEN MANUFACTURING CO.
Established 1831.
WORCESTER, MASS.

MANUFACTURERS OF
Iron and Steel Wire,
PATENT STEEL BARB FENCING,
Patent Steel Wire Bale Ties.
WIRE RODS of all Grades; Round Iron, Rivet quality, 5-16 in. to ¼ in., cut to any length. Owners and exclusive Operators of the PATENT CONTINUOUS ROLLING MILL, producing Iron and Steel WIRE, in coils of 100 pounds, without SEAM or WELD. Patent Galvanized Telegraph Wire, Market and Stone Wire, Annealed Fence and Grape Wire in long lengths; Coppered Pail-Ball Wire; Rope, Bridge, Bolt, Screw, Rivet, Buckle and Chain Wire. Wire for the manufacture of Card Clothing, Heddles, Reeds, &c. Piano-string Covering Wire, Tinned Broom Wire and Tinned-plated Wire of all sizes. A specialty is made of Clock, Machinery, Gun Screw and Spiral Spring Wire, and Refined Wire to Pattern for particular purposes, from selected stamps of Norway Iron. Any grade of Wire furnished, Annealed, Bright, Polished, Coppered, Galvanized or Tin Plated. Wire furnished, Straightened and Cut to any length. Steel Crinoline Wire, Patent Linen finish. Unrivaled Steel Music Wire. Steel Wire for Springs, Needles and Drills. Market Steel Wire kept in stock, all sizes.
WAREHOUSE, 21 CLIFF STREET, NEW YORK. St. Louis Office, 717 North 2d Street


NATIONAL WIRE & LANTERN WORKS. Warehouse, 45 Fulton St. N. Y.
HOWARD & MORSE,
Manufacturers of Brass, Copper & Iron Wire Cloth, Locomotive Spark Wire Cloth, Iron Wire Bolting Cloth, Ship and Railroad Lanterns, Signal Lights, Conductors' Lantern, Adjustable Globe Hand Lantern, Desk & Office Railing, Riddles, Coal & Sand Screens, Nursery Fenders & Spark Guards, Ornamental Wire Fence.

WORKS AT TRENTON, N. J.
ROEBLING'S WIRE ROPE
New York Office AND Warehouse AT 117 Liberty Street
THE JOHN A. ROEBLING'S SONS CO.,
MANUFACTURERS OF
WIRE ROPE
OF
Iron, Steel and Copper
FOR
Hoisting Purposes of all kinds, for Ferries, Stays, Ship Rigging, Sash Cords, Lightning Rods, &c., &c. Suspension Bridge Cables.
GALVANIZED
Telegraph Wire, Market Wire, Vineyard Wire.
Iron and Steel WIRE
FOR
Market Wire, Fence Wire, Bridge Wire, Chain Wire, Buckle Wire, Spring Wire, Rivet Wire, &c., &c.
GALVANIZED WIRE CLOTHES LINES.

IRON AND STEEL WIRE ROPE
For Hoisting, Running & Standing Ropes, Ferries, &c.
CONSTANTLY KEPT ON HAND.
Address, HAZARD MFG. CO., Wilkesbarre, Luzerne Co., Pa.

FELTEN & GUILLEAUME,
Carlswerk, near Cologne, Germany.
PATENT CRUCIBLE STEEL WIRE,
For Mining and Plow Ropes, Hawsers and Bridge Cables.
SIEMENS-MARTIN AND BESSEMER STEEL WIRE,
Flusseisen, Swedish and German Charcoal Wire.
GALVANIZED TELEGRAPH WIRE
of Charcoal and Swedish Iron and Steel, also with high conductivity, and in long lengths.
GALVANIZED STEEL WIRE,
For Plain, Barb and Strand Fencing, 3, 4 and 7-ply Strand, Staples, &c. Annealed and Oiled Fencing Wire, round and oval.
WIRE ROPE
OF EVERY DESCRIPTION.
TELEGRAPH CABLES.
Contractors to the German and Foreign governments. The oldest house in the branch on the Continent. Telegraph Address, CARLSWERK, COLOGNE.

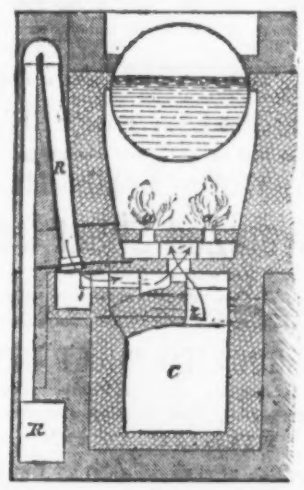
J. WOOL GRISWOLD,
Manufacturer of
WIRE,
TROY, N. Y.


WIRE RAILING
AND
Ornamental Wire Works.
DUFUR & CO.,
No. 36 North Howard St., Baltimore.
Manufacture WIRE RAILING for Cemeteries, Balconies, &c.; Sieves, Fenders, Cages, Sand and Coal Screens, Woven Wire, Iron Bedsteads Chairs, Settees, &c.

The Mineral Resources of the Chattanooga District.

Before a recent meeting of the Iron, Coal and Manufacturers' Association, Gen. J. T. Wilder delivered a lecture on the mineral resources of that portion of Tennessee of which Chattanooga is the central point. As a brief and lucid presentation of the facts, we commend it to the attention of the readers of *The Iron Age:*

The coal field of Tennessee extends entirely across the State, from Kentucky to Georgia and Alabama, being an extension of the Appalachian coal fields, whose northern extremity is in Northern Pennsylvania, and extends southwesterly across Pennsylvania, West Virginia, Eastern Kentucky, Tennessee and ends in Central Alabama. The coal field of Tennessee covers 5100 square miles; there are about 4000 square miles in Alabama and 250 square miles in Georgia, all belonging to the lower coal measures. All these broad acres, excepting a small area in Alabama, form a covering for the Cumberland table land, raised above the surrounding country, with an outcrop above the drainage level of the valleys on either side, easily



Gas Firing for Steam Boilers.—Fig 3.—Vertical Section of Boiler.

opened, ventilated and drained. From Cumberland Gap, on the Virginia line on the northwestern side of the Valley of East Tennessee, down to Chattanooga, 260 miles, is a continuous outcrop of from one to three workable veins of coal, all above drainage level. From Chattanooga to Tuscaloosa, Alabama, 190 miles, along the northwestern side of Lookout, Wills' and Jones' valleys, through which runs the Alabama Great Southern Railroad, this same outcrop continues. On the southeast side of Lookout and Wills' valleys is the outcrop of the same coal beds, in the upper section of Lookout Mountain, for 75 miles. The Tennessee River bisects it at Chattanooga through to Shellmound, Alabama, and then skirts its northwestern side, 75 miles further, nearly to Decatur, Alabama. The Sequachee River cuts a deep trough through it from the Crab Orchard Mountain in Cumberland County, Tennessee, 65 miles southwesterly to the Tennessee River at South Pittsburgh, 20 miles west of Chattanooga, bifurcating the coal field of Tennessee, and leaving the Wallen's Ridge coal field, about 10 miles wide, between the Sequachee and East Tennessee valleys, with the Tennessee River running parallel to its southeastern base, and from three to five miles distant from the line of the coal outcrop. From Chattanooga to Emory River, a distance of 80 miles, parallel to the outcrop of this coal field, and

Gas Firing for Steam Boilers.—Fig. 6.

along its base, runs the Cincinnati Southern Railroad. The Emory River rises on top of the broad Cumberland coal field, runs southeast across its edge, and empties into the Clinch River near Kingston. The Cincinnati Southern Railroad follows the valley of the Emory River, climbing with an easy grade 30 miles to the summit of the coal field, until it reaches the waters of the Cumberland River, and then follows a natural slope, with a moderate grade to the Cumberland River at Point Burnside, having run 80 miles from Chattanooga along the southeastern base of the coal measures, and then directly on and across them 70 miles further toward Cincinnati.

These lower coal beds, easily and cheaply opened and worked, are the best suited for making good qualities of iron, being generally free from sulphur and making a good quality of coke. The Chattanooga blast furnace uses from 70 to 80 bushels of coke to smelt a ton of No. 1 foundry iron, and the Rockwood furnaces about the same amount, the coke in both instances being made from the same coal seam, called the "Sewanee," at Tracy City in Grundy County, and the Rockwood seam at Rockwood, in Roane County, localities 100 miles apart. This coal belongs to the lower coal measures, and lies on top of the great layer of conglomerate rock of the lower carboniferous period. This seam is, where undisturbed, from 4 to 5½ feet thick. There is no good reason why this superior coal could not be cheaply mined on the banks of the Tennessee River, immediately below Chattanooga, where the river cuts a deep gorge across and through the Wallen's Ridge coal field, a distance of more than 10 miles, with coal cropping out on both banks of the river and high above it. When the Muscle Shoals of the Tennessee River are made navigable, a large industry can here be made profitable by supplying cheaply, from this source, coke equal to the best "Connellsville," to the iron districts of West Tennessee, Western Kentucky, and Missouri, and suitable for smelting Bessemer and foundry pig iron.

Having thus hastily shown you the position of the first element of successful manufacturing industries—abundant coal of excellent quality—I will now point out to you the location of that other twin element of recognized national power and growth, abundant beds of iron ore. By looking at the map of Chattanooga mineral district, you will see the great broad bifurcated, dark belt of the coal formation, split in two northeast and southwest by the Sequachee Valley, margined and bisected by the deep cut of the Tennessee River above and below Chattanooga, and radiated by the seven railroads converging here. On the eastern side of the Sequachee Valley you will notice a red marginal line extending 65 miles up that valley, to its head. Again, you will see a long red line beginning in Central Alabama, near Tuscaloosa, following the southeast edge of the Alabama coal field, running on both sides of the Alabama Great Southern Railroad to Chattanooga, 150 miles, extending all around Lookout Mountain, which is 80 miles long, and centering in one red line at Chattanooga; then following the southeast base of the Wallen's Ridge coal field, 80 miles northeast along the line of the Cincinnati Southern Railroad, and continuing on in the same position and direction until it passes into Virginia, near Cumberland Gap. You will also notice another red line cut through by the Tennessee River in a number of places from Rockwood down to Piney River, a distance of 20 miles. You will also see at Clinton, on the Clinch River north of Knoxville, another red line running southwest, crossing the Tennessee River five miles above Kingston, continuing its course parallel to the Tennessee and about three miles southeast of it, 40 miles to the Hiwassee River, then gradually curving more to the south, crossing the East Tennessee Railroad near Ooltewah, 15 miles east of Chattanooga, and the Western and Atlantic Railroad, near Ringgold, Georgia, 18 miles from Chattanooga, and crossing the proposed railroad from Chattanooga to Rome, Georgia, 25 miles from Chattanooga, then southwest 60 miles along the north side of the Coosa River to Gadsden, Alabama, where it runs into a like red line at the eastern base of Lookout Mountain.

These long red lines—aggregating over 900 miles in all—mark the line of an outcrop of wonderful beds of fossiliferous red hematite iron ore, none of it more than 15 miles from the eastern outcrop of the coal measures. These ore seams belong to the Clinton rocks of the upper silurian period, and lie bedded in green shales, about 100 feet below the black bituminous shale of the devonian era, which, through all this distance, is about 50 feet thick, and is covered by the great limestone beds of the sub-carboniferous period. All these formations lie like the leaves of a book, flat bedded on each other, and generally tilted up and broken into high ridges, or folded into deep synclinal troughs or valleys, in either case exposing the edges of the ore beds, making it easy to find, ready to mine, abundant in quantity and always accessible. These beds usually average 3 to 5 feet in thickness—sometimes more. Now turn north with me to the southeastern side of the valley of Tennessee. Here you will see a wonderful succession of parallel ridges, running northeast and southwest along the northwestern base of the high Appalachian chain of mountains, which skirt the southeast side of the great valley of East Tennessee. All along this region are very large beds of brown hematite or limonite iron ore, apparently exhaustless in quantity, and extending from Central Alabama in a continuous chain beyond the Virginia line, a distance of more than 300 miles. From this ore is made the fine car-wheel iron of Alabama, Georgia, and East Tennessee, smelted in cold-blast furnaces with charcoal for fuel. This grand chain of ore beds usually lies bedded on the lower layers of the lower silurian rocks, in proximity to the metaphoric rocks, and distant from the coal field 30 to 40 miles. These ores are accessible by railroads in Northwest Georgia and Eastern Alabama, and can be laid down in Chattanooga at $2.50 per ton. They usually yield about 50 per cent. of iron in the blast furnaces. The fossiliferous ores yield from 45 to 56 per cent. of pig iron in the Chattanooga Blast Furnace—all are easily smelted and cost here from $1.75 to $2.25 per ton. An excellent quality of limestone is found near the coal and iron beds. The limestone used in the Chattanooga Blast Furnace contains 96 per cent. of carbonate of lime, and costs at the furnace 50 cents per ton. On the southeast side of the Tennessee Valley are found large veins of magnetic iron ore, similar to the ores of Iron Mountain, Missouri; it is a rich black oxide, yielding about 66 per cent. of metallic iron, free from sulphur or phosphorus, and low in silica, very suitable for the manufacture of the finest grades of steel—I refer to the "Cranberry" ore beds of Carter County, East Tennessee, and Mitchell County, North Carolina. These ores, when reached by the proposed railroad, can be delivered at Chattanooga cheaper than ores of like quality can anywhere reach coal suitable to smelt them.

All these great combinations of good and cheap materials, for the successful manufacture of iron at Chattanooga, combined with the facilities for collection and distribution, insure to the Chattanooga mineral district a prosperous future, and furnishes the reason why merchantable pig iron has been made here as low as $9 per ton.

The following figures show the yield of iron at the Chattanooga blast furnace: Ooltewah red ore, 56 per cent; half moon, or Tennessee River ore, 40 to 50 per cent; Attalla, Alabama, red ore, 53 per cent.; Morganville, Georgia, red ore, 33⅓ per cent.; Rising Fawn, hard red ore, 33⅓ per cent.; Rising Fawn, soft red ore, 50 per cent.; Woodstock, Alabama, brown ore, 48 per cent.; Pryor's Station, Alabama, brown ore, 48 to 50 per cent.; Rockwood red ore, 48 to 55 per cent. pig iron.

The red fossiliferous ores of this district, when properly mined and kept clean, will readily yield from 50 to 56 per cent. of iron. The soft ores hold a large per cent. of water, and should be fire-dried before smelting. The hard ore of Wills Valley contains a large per cent. of lime, usually enough to flux them in the blast furnace. A singular

The Vibration and Fire Risk of High Factory Buildings.

A late article, by a Boston underwriter of textile mill risks, states that in many New England mills the vibration will, in the loftiest structures, cause water to slop over from a pail two-thirds full, if the pail be placed on one of the highest floors. Gas pendants show corresponding vibration (plainest when loosely hinged) by swaying 2 or 3 inches. Such tremor, though in less degree, has been noticed in heavily built four-story stone mills, and even in those having iron floors with brick arches. In one of the last-named kind it became necessary, before satisfactory work could be done, to put wooden blocks in the walls, upon which the iron girders might rest. This jarring is not only hard on shafting and hangers, but especially detrimental to cog-wheels and all delicately set machinery. The *American Exchange and Review*, commenting on these facts, points out that there is another view of this subject, increasing the disadvantages of vibrations. It is in accordance with natural laws, just as iron constantly jarred becomes more granular in form and weaker in cohesive force, that walls of brick or stone subject to constant tremor shall become disintegrated and weakened. In such a case the work of the fire is partly done before ignition commences. The buildings may not fall before a fire, as in the case of the large Pemberton mills some years ago, but when fire attacks a factory whose walls have for years been shaking, as with a chronic chill, the whole building is likely to fall into one mass of ruin early in the fire, or else the fire be much more extended by the falling of some of the long-shaken walls, than if they had been able to resist the suddenly added molecular vibrations of intense heat. There is undoubtedly a difficulty in strengthening wooden girders with iron rods and trusses, for in case of fire such compound girders are weaker than one of wood only, because, trusting to the iron, they are frequently overloaded; and it is during strong heat that the weakness of iron becomes apparent. Rectangular iron knees to brace girders to walls are objectionable, because in a fire, when the interior pillars yield, the ends of girders in the wall may so hold that the leverage of the long timber will pull the walls inward. It should be remembered that by the intense heat of a fire heavy walls are temporarily weakened, but if strong enough to stand, their strength returns after cooling, and they can often be used in case of rebuilding or restoring. Synchronous vibration is very dangerous to any structure, and for this reason platoons of soldiers are never allowed to march over even the strongest bridge; they must "break step" and walk with irregular tread.

It is a fact that in mills of ordinary construction a safe form for stability and for low rate of fire destructibility, is two stories high, extending over sufficient space to give the room required. It is safe to assume that equal cubic content, with double the base area, has but one-half the fire loss liability of the double altitude, with conditions otherwise equal. Add to the fire result of difference in hight the effect of the greater vibration of the higher structure, and the hazard of the higher structure is yet further augmented.

It is self-evident that a two-story mill, even if not properly built, would naturally shake less; and for several other reasons the walls are more likely to stand after fire, than in case of factories having many lofty stories. A one-story mill with cement floor—and especially if all the roof be iron—is the safest fire risk any manufactory can offer; but next to it comes the two-story mill, which, for many kinds of work, is far more convenient and easier to operate than the other, while always as much cheaper as a floor is cheaper than a roof; and in a city but half the amount of costly ground would be needed. If such a two-story mill had, at proper intervals, strong dividing brick walls, extending several feet through the roof, and iron doors for communication, sliding into the wall, not only would such division wall brace the building so as to prevent vibration, but it is probable that in case of fire only one compartment, and perhaps only one story of that compartment, would be seriously injured.

The French Atlantic Cable Company makes the following announcement in the English papers: In reply to numerous inquiries made by senders of American telegrams, this company begs to give notice that as soon as its English lines are completed its tariff will be fixed at two shillings a word for messages to New York, being a reduction of 33 per cent. on the existing rates. The company adopts the two-shilling tariff with the intention of maintaining it without increase. This is supposed to indicate the failure of the negotiations between the Anglo-American Company and the new company for an indentical tariff and working agreement. It is understood that the new company's steamer will leave the Thames during the present week to lay a cable connecting the English with the French wires of the company.

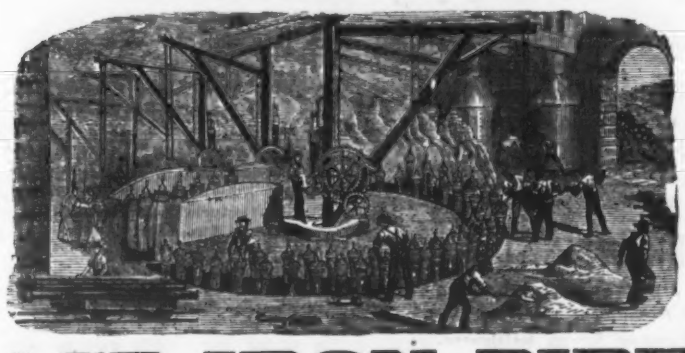
Belgian Steel Rails.—Advices received from Brussels make the important announcement that the Angleur Steel Works Company has obtained contracts for 13,500 tons of steel rails. Of these rails 5500 tons are to go to the United States, and the remainder to Spain. The contract prices average £9. 8/ per ton.

During the first 10 months of 1879 the export of pig and scrap iron from Belgium reached 17,411 tons, compared to 3949 tons during the corresponding period in 1878, an increase which is attributed mainly to American demand.

McNEALS & ARCHER,

BURLINGTON, N. J.

Flange Pipes.



General Foundry Work.

CAST IRON PIPES

FOR WATER AND GAS.

ESTABLISHED IN 1845.

SINGER, NIMICK & CO.,

PITTSBURGH, PA.

MANUFACTURERS OF ALL KINDS OF

HAMMERED AND ROLLED

STEEL,

Warranted Equal to any Produced.

BEST REFINED TOOL CAST STEEL

For Edge and Turning Tools, Taps, Dies, Drills, Punches, Shear-Knives, Cold-Chisels and Machinists' Tools generally.

SAW PLATES

For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel

For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws, Stamping Cold, &c., &c.

SIEMENS-MARTIN (Open-Hearth) PLATE STEEL

For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

☞ All our Plate and Sheet Steel being rolled by a Patented Improvement is unequaled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL

For Shafting, Spindles, Rollers, &c., &c.

File, Fork, Hoe, Rake, R. R. Frog, Toe-Calk, Sleigh-Shoe and Tire Steel, &c.; Cast and German Spring and Plow Steel.

"Iron Center" Cast Plow Steel,
"Soft Steel Center" Cast Plow Steel,
"Solid Soft Center" Cast Plow Steel.

Finished Rolling Plow Coulters with Patent Screw Hubs attached.
Agricultural Steel cut to any pattern desired.
Steel Forgings made to order.

Represented at 59 BEEKMAN ST., NEW YORK, by

HOGAN & BURROWS, Gen'l Agents for Eastern and New England States.

MIDVALE STEEL WORKS,

CRUCIBLE AND OPEN HEARTH STEEL.

TIRES AND AXLES

OF EVERY DESCRIPTION.

TOOL, MACHINERY AND SPRING STEEL CASTINGS AND FORGINGS.

WORKS AND OFFICE: Nicetown, Philadelphia, Pa.

WAREHOUSE: 12 N. 5th St., Philadelphia, Pa.

ESTABLISHED 1847.

A. WHITNEY & SONS,

PHILADELPHIA,

CHILLED RAILROAD WHEELS

For every kind of service, including *Street, Mine and Lumber Tramways.* Wheels furnished in rough bored or on axles. Chilled castings made to order.

PENNSYLVANIA STEEL COMPANY,

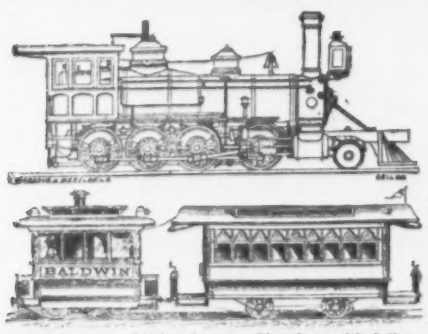
Steel Rails, Frogs, Crossings & Switches.

Forgings for Piston Rods, Guide Bars, Wrist Pins and Machinery Purposes.

Works at Baldwin Station, Pennsylvania Railroad, near Harrisburg, Pa.

Address all orders to

PENNSYLVANIA STEEL COMPANY, 208 South Fourth Street, Philadelphia.



BALDWIN LOCOMOTIVE WORKS,

BURNHAM, PARRY, WILLIAMS & CO., Proprietors,

Philadelphia, Pa., U. S. A.,

Manufacturers of

LOCOMOTIVE ENGINES

of every Description.

Catalogues, photographs and estimates furnished on application of customers.

NOISELESS STEAM MOTORS,

For city and suburban Railways.

These machines are nearly noiseless in operation; show no smoke with the use of anthracite coal or coke as fuel, and show no steam whatever under ordinary conditions of service. They can be run at two or three times the speed of horse cars and draw additional cars. Circulars with full particulars supplied.

CHROME STEEL

WAREHOUSE.

Address JOHN W. QUINCY, Manager, 98 William St., N. Y.

This Steel is made from Chromium and Iron, and is remarkable for Strength, Durability and Uniformity. Send for Circular, where the proof will show it does 25 to 75 per cent. more than other cast steel. It is adapted to all kinds of work where cast steel is used. Chrome Steel Castings from 25 to 500 lbs. to order.

Southern Advertisements.

ROANE IRON COMPANY,

Manufacturers of and Dealers in

Pig and Railroad Iron.

CHATTANOOGA, - - - - - TENN.

S. B. LOWE, Chattanooga, Tenn.,

DEALER IN

PIG IRON IRON ORES AND FURNACE COKE.

LIGHT GRAY IRON CASTINGS

MADE A SPECIALTY BY

TAYLOR & BOGGIS,

65 to 73 Central Way,

CLEVELAND, OHIO.

Having extensive machine shop connected with foundry, we are enabled to fit up all kinds of light Hardware or patented articles. Correspondence solicited.

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including

Gun, Pistol, Wrench Bars, &c. Also, Die Sinking. Manufacturers also of Bricklayers', Moulders' and Plasterers' Tools, Saddlers' Round and Head Knives.

WILLIAM ROSE & BROS.,

36th & Filbert Sts., West Philadelphia.

RICHARD P. PIM, Wilmington, Delaware,

MANUFACTURER OF

REFINED AIR FURNACE MALLEABLE IRON,

IMPROVED PROCESS,

And LIGHT GRAY IRON CASTINGS.

Castings of Best Quality made to order at short notice.

BRITTON IRON AND STEEL CO.,

MANUFACTURERS OF

BOILER, TANK AND BRIDGE PLATES,

Galvanized and Black Sheet Iron.

Foot of Wasson Street, CLEVELAND, OHIO.

JACKSON IRON COMPANY,

Manufacturers of
Fayette Pig Iron (L. S. Charcoal),
Stewart Pig Iron (Bituminous Coal and Coke),
Also, Hammered Blooms, Billets and Muck Bar, extra low in phosphorus, for Siemens Martin and Crucible Steel. Miners of Jackson (Lake Superior) Iron Ores.

Especially adapted for Bessemer, Siemens-Martin Malleable and Car Wheel purposes.

FAYETTE BROWN, Gen. Agent. HARVEY H. BROWN, Asst. Gen. Agent. Offices, 130 Water St.

HARVEY H. BROWN & CO.,

AGENTS

CHAMPION IRON CO.,
LAKE SUPERIOR IRON CO.
} Lake Superior Iron Ores.

Dealers in Pig Iron, Iron Ores and Old Rails.

Offices, 130 Water Street, - - CLEVELAND, OHIO.

IRON ORES

C. E. BINGHAM & CO.,

Agents for the Sale of

Lake Champlain, Lake Superior and Canada Iron Ores and Pig Iron,

CLEVELAND, - - OHIO.

J. M. KING & CO.,

WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT

"WIRE CUTTER AND PLIER COMBINED."

Specially Adapted for Use on Wire Fence.

Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

Price List on application. Established by DANIEL B. KING, 1829.

A. C. NORTHROP,

Waterbury, Conn.,

NOVELTIES IN BRASS AND OTHER METAL GOODS

FOR HARDWARE TRADE.

Wrought Iron and Brass Machine Screws; Turned, Hexagon, Round and Square Head Cap and Set Screws; Brass and Iron Safety and Jack Chain; Gilt, Nickel Plated and Bronze Trimmings of all kinds, from Sheet Iron, Steel or Brass.

Estimates on patented articles, or any description of Sheet Metal work, respectfully solicited and promptly given.

John Carver,

MANUFACTURER OF

CAULKING IRONS,

Cotton, Freight and Hay Hooks,

No. 44 North Third Street,

Near First, BROOKLYN, E. D.

CAMPANIL IRON ORE,

SOMORROSTRO MINES.

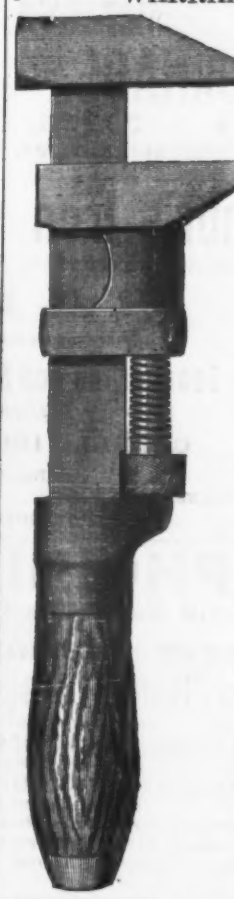
J. LLERA,

15 DEY ST., New York.

P. O. Box 3984.

TRADE STANDARD GIRARD WRENCH. MARK.

WARRANTED.



FOR **STRENGTH** AND **Durability** IT HAS NO SUPERIOR.

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the *increased demand* for these justly Popular Wrenches, we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

A. Garrison. J. H. Ricketson. Wm. Holmes

PITTSBURGH FOUNDRY.

A. GARRISON & CO.,

Manufacturers of

Chilled Sand and Patent Homogeneous Steel

ROLLS,

Both Solid and Hollow,

Ore and Clay Pulverizers, Rotary Squeezers, Haskin's Patent Double Spiral Pinions, and Rolling Mill Castings of every description.

OFFICE, 6 Wood St., - - PITTSBURGH.

Bridgewater Iron Co.,

Bridgewater, Mass.,

Manufacturers of

SEAMLESS DRAWN COPPER AND BRASS TUBES,

TACK PLATES,

Forgings of every description.

Bridgewater Iron Co.'s

HORSE NAILS.

PRICE LIST.

Nos.	5	6	7	8	9	10
Per lb.	20¢	23¢	21¢	20¢	19¢	18¢

Liberal discounts to the Trade.

73 Pearl Street, New York.

28 Bread Street, Boston.

The Iron-Masters' LABORATORY.

Exclusively for the

Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

J. BLODGET BRITTON.

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

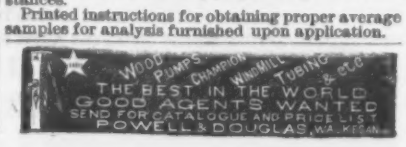
CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12.50
For each additional constituent of usual occurrence	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel	7.00
For each additional constituent of usual occurrence	5.00
For the per cent. of Carbonate of Lime, and insoluble Silicious Matter in a Limestone	10.00
or each additional constituent	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12.50

For determining the constituents of a Clay, Slag, Coke, or of an Ash in Coal the charges will correspond with those for the constituents of an ore.

For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.

Printed instructions for obtaining proper average samples for analysis furnished upon application.



The Butler Mine Fire Cut-Off.

Before a recent meeting of the Engineers' Club, of Philadelphia, the following interesting communication was read on the Butler mine fire cut-off, coming from Mr. C. T. Conrad, superintendent of the mine:

The fire in the Butler colliery, a short distance from the Lehigh and Susquehanna Railroad, on the outskirts of Pittston, Penn., continues to burn fiercely. At present it is estimated that 10 acres of anthracite are glowing in the upper vein, and the most startling phase of the affair is that the miners in the employ of the company are working the vein beneath. A visit to the workmen in their subterranean oven gives some idea of the intensity with which the fire is raging over their heads. Although separated from them by 70 feet of solid rock, yet the heat is so great that they are compelled to work without a particle of clothing upon them, excepting a light pair of drawers or overalls. The perspiration pours constantly from their bodies, and the temperature is much the same as if they were at work in presence of a roaring furnace. It is very seriously questioned by those understanding the situation whether the men should be permitted to work in this intensely perilous position. Even the air they breathe has to pass through the flames of the burning vein before it reaches them, and it is understood that Mine Inspector Jones has already notified the company that they must construct another shaft, to admit pure air to the workmen, or quit work.

The fire in the Butler mine has now been burning upward of two years. It originated in the old workings of an abandoned mine, near what was known as the outcrop of the 14-foot vein, and on the very highest ground of the property of the Butler Coal Company. The destructive spark was first kindled by a poor, degraded woman, who, having been driven from the shelter of the town, took refuge in one of the numerous caves on the outskirts. Here she made a fire for the purpose of cooking and to keep her warm at night. One midnight she was alarmed by seeing the entire side of the cave on fire, and she fled in terror from the scene. Superintendent Bennet, one of the most practical and careful managers in this region, had his attention called to the fire early in June, 1877. By that time it had made a good deal of headway northeast of the pitch along the pillars, and the course it was taking indicated that it would shortly exhaust itself. There was nothing to give rise then to the apprehension that it would work its way down the pitch or declivity, and immediate steps were taken to cover the "cave holes" by which the air was admitted to feed the flames. These holes had been caused by the caving of the surface where the mine had been worked out, and no pillars left to support the roof. The stopping up of these prevented in a measure the progress of the fire, but owing to the elevated character of the place, it was impossible to obtain water in sufficient quantity to be effective. An arrangement was made with a party to open and clear out an old chamber in the mine, intending thereby to cut off the flames, but the work was done in a bungling manner and failed to do what was intended.

Seeing the threatening character of the element the company at length adopted a plan, at an enormous expense, which it was hoped would prove effective. A point was selected about 800 feet from the fire, at which an open cut was begun from the surface down to the old workings. It was intended that this cut would be 350 yards in length, 20 feet wide at the bottom, and ranging from 12 to 45 feet in depth. The plan was that of Engineer C. T. Conrad, who contemplated at the outset the removal of 50,000 cubic feet of earth, rock and coal in the construction of this magic circle about the fire. He tunneled a part of the way, and, in the face of obstacles apparently insurmountable, he worked steadily day and night with a strong force of men until his plan was effected. The progress of the flames have since been slow, but now they seem to have gained a great hold, and not only the coal, but the superincumbent rock, is red with fire. It has now advanced almost to Engineer Conrad's circumscribed limit, and much anxiety is felt lest it should break beyond the boundary.

The danger lies in the tunneled part, where it is feared glowing rock will carry destruction over the archway and communicate it to the adjoining property. The great danger from the fire would arise from its extension into the workings of the Pennsylvania Coal Company, and once there, no power on earth can prevent it from working its way under the town of Pittston.

Mr. Conrad, in a letter under date of Nov. 11, 1879, says: "All work was finished on the cut-off September 30, and changes occurring since then have only served to confirm the announcement, then made to the company, that the work was a complete success. There was no question of the success of any portion of the work except the tunnel. This was not in the original plan, but was afterward decided upon from economical reasons. After full study and examination on my part, and in opposition to the opinion of many good engineers and experienced coal operators, the tunnel was made to effect a saving of $11,000, and to insure ample time for the rest of the work. Both of these objects the tunnel accomplished, and then the original question came up, could or would the fire cross it?

"There are dry walls on both sides of the tunnel varying from 18 to 32 feet in thickness, with an intervening space of 12 to 18 feet. The walls were carried 4 feet above the coal, *i. e.* 18 feet high in all. The wall on the fire side during the past summer has been heated to a white heat through to the exposed face, this occuring at different points from time to time, but all cooling off in a few weeks and never reheating. Finally the great heat penetrated through the 50 feet of rock and earth covering, and so weakened and disintegrated the mass that it finally broke down in sufficient quantities to close up the tunnel with broken rock. This did not occur, however, until after the fire had spent itself and the walls were all cool.

"I conclude that fire will not pass through two stone walls, properly built and proportioned, and with a cold-air passage kept open between them. While I adopted not less than 10 feet air space, for safety, I am satisfied that 3 feet would have accomplished the same object."

European Oil Fields.

Considerable attention has been given recently to the oil fields of various parts of Europe, and there is some apprehension that if present indications are borne out some younger regions, notably that recently discovered in Hanover, may prove formidable rivals to our Pennsylvania producers. The following account of the various European fields may therefore be of some interest:

The oil developments in Russia have been made along the Caucasus Mountains, from the Caspian to the Black Sea, a distance of 1500 miles. Oil was discovered on the eastern shore of the Black Sea in 1865, but nothing is being done there at present in the way of production. Along the Kuban River, a stream emptying into the Black Sea, a paying territory is being developed. Two wells have been sunk by a company of French capitalists, a Pennsylvania operator, the well-known Dr. Tweddle, of Pittsburgh, directing the work. This company has a refinery at Taman. The principal producing field is at the eastern end of the Caucasus range, along the Caspian Sea at Baku. Here, managed by American skill, numbers of wells have been sunk, and a daily product of 28,000 barrels of crude petroleum is obtained. Many of the wells are flowing ones, with immense capacity. They are drilled to an average depth of 300 feet, and spout their substance to the surface through 12-inch pipes. Immense quantities of sand are thrown up with the oil, and around some wells is banked up 30 feet high and 300 feet about. Refineries of very large capacity are located at Baku, and while the same principle of refining that is used in this country is adopted there, its application is yet deficient, and the refined oil is far below the quality of refined American oil. Owing to lack of transportation facilities, very little Russian oil is exported. Good authorities think that at present the oil trade of America has nothing to fear from the Russian field, as American oil, possessing, as it does, unlimited, and comparatively cheap transportation facilities, can be placed in the markets of the world at a rate with which Russia cannot now compete.

The Russian oil field may be said to be comparatively boundless. It extends down into India, where developments have been making with more or less success for some time. Oil exists in British Burmah, in Assam, and the Punjaub. In the Rangoon district petroleum has been known for centuries. The wells are attended with the same eruption of sand or mud that characterizes the Russian wells, and are called by the natives mud volcanoes. In some parts of India the crude petroleum is very thick, and becomes solid at a temperature of 60 degrees. It is called Rangoon tar, and contains 10 per cent. of paraffine. In other parts the oil is thin, transparent, and light-colored. The oil fields of Austria are situated in the Carpathian Mountains, in the primitive Province of Galicia. The whole field is 400 miles long, and 40 wide, extending from Klenezany, in the northwest, to Remairi, in the southeast, and across the Carpathian Mountains, from Szigeth, in Hungary, to Jasio, in Galicia. It is divided into the eastern, western, and Hungarian districts. The Western District produces about 400 barrels of crude oil a day in an area of territory 70 miles long and 10 wide. Operations have been carried on here in a more or less primitive way for 20 years. Steam-power has not been introduced yet, the work of engines being done by lusty and lazy Poles. The wells are put down from 500 to 800 feet, when the oil is struck. It varies in gravity and color. On one favorable spot, five acres in extent, 150 wells have been put down. The nearest railroad from Roboka, the principal oil center of the western district, is 30 miles distant. The oil is refined on the spot as it comes from the wells. Teamsters carry the oil to the railroad for 15 cents a barrel, so that, as regards cheapness of transportation, the railroad might as well be 30 miles away as on the spot. The eastern district of the Galicia oil field is at present doing very little in the way of oil production. The wells are principally centered about a place called Boryslaw. They yield from three to ten barrels a day. The oil is clear, and of a deep-green color.

A peculiar formation found in connection with the Galician oil is a wax known as ozokerit, which is extensively dealt in for the manufacture of candles. Both of these older regions, though of great extent and capable of considerable production, are less dangerous to American producers, because they are more remote from the more important markets, and because they are controlled by men of little enterprise. Though much smaller in extent, the lately discovered Hanover region is likely to prove a much more formidable rival, because it is very accessible, and is being pushed by energetic men of means.

The Hanover petroleum region has been ascertained to extend from the city of Hanover, where oil is found in the suburbs of Linden and Linmer, as far as the Hildesheim Hills to the south, and the villages of Oilper and Klein Scheppenstett to the east. The whole area seems to comprise about 40 square miles, the centers being at Oberg and Oilsburg, and the districts due north and and south of these two principal places. Herr Strippelman, a well-known mining engineer, and the latest author upon the subject, in a recent elaborate account, gives it as his deliberate opinion that things in Hanover have reached a point exactly similar to what was the situation in America immediately anterior to the discovery of the Pennsylvania wells. A like view is taken in a report by Herr von Decken, a Hanover mining councillor and government engineer, who has just inspected the Oedessen Works. Steps are being taken for forming a boring petroleum company to work the newly-discovered riches of Hanover. The prospects in Germany are regarded as sufficiently promising to justify the simultaneous opening of several bores in different localities. The Pennsylvania rope-

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

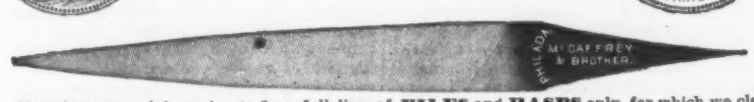
89 Chambers and 71 Reade Streets, N. Y

Paris, 1878. *For Superiority.*

McCAFFREY & BRO.,

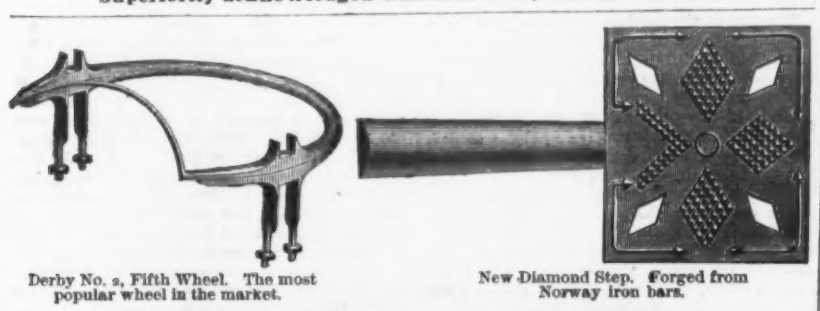
PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.



Derby No. 2, Fifth Wheel. The most popular wheel in the market.

New Diamond Step. Forged from Norway iron bars.

WILCOX & HOWE,

Birmingham, Conn.,

MANUFACTURERS OF

First-Class Carriage Forgings, Fifth Wheels, Steps, Body Loops, Stay Ends, Offsets, Long Joint Ends, &c., &c.

Our Illustrated Catalogue furnished to the trade.

BEST WOOD TURNING IN THE WORLD. RIPLEY MF'G CO. UNIONVILLE CONN.

Handles for Manufacturers.

SELECTED STOCK,

SEASONED THOROUGHLY,

WELL MADE.

Orders solicited from close buyers who want good work.

RIPLEY MANUFACTURING CO.,

Unionville, Conn., U. S. A.

MANUFACTURERS OF

Common Mouse Traps, Porcelain Lined Lemon Squeezers, Mallets, Rosewood Faucets, Steak Hammers and Housefurnishing Ware.

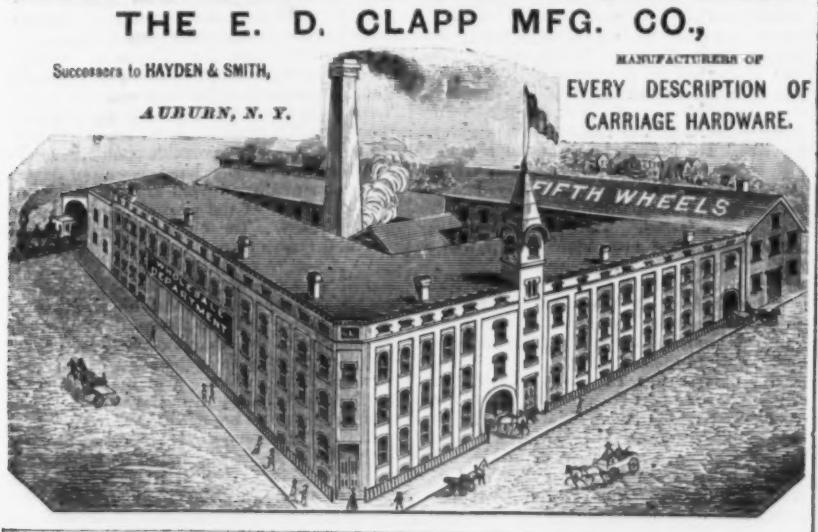
THE E. D. CLAPP MFG. CO.,

Successors to HAYDEN & SMITH,

AUBURN, N. Y.

MANUFACTURERS OF

EVERY DESCRIPTION OF CARRIAGE HARDWARE.



SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.

THE WHITE MOUNTAIN FREEZER COMPANY are headquarters for Ice Cream Freezers and Ice Crushers, being the only firm in the United States who manufacture all parts of the raw material. The Examining Committee, consisting of 50,000 citizens of the United States have recommended the *Sands' Triple Motion White Mountain Freezer* to all persons in the world for the following reasons: We have used them; they freeze quicker than any other; they save time, salt and ice; the triple motion makes smooth cream without bunches; makes more of it; galvanized iron outside; tin inside; no zinc in contact with the cream; easily adjusted; substantially made; simple in construction; perfect in results. Send for descriptive circular and discount of this celebrated Freezer. Address,

HAND FREEZER. 2 to 25 qts. $3.50 to $25.00.

HAND OR POWER. 25 and 50 qts. $75.00 and $175.00

HAND OR POWER ICE CRUSHER. $75.00

White Mountain Freezer Co.,

Laconia, N. H., U. S. A.

SPECIAL ATTENTION GIVEN TO EXPORT ORDERS.

THE HARTFORD MACHINE SCREW CO.,

Manufacturers of

Hexagon Head Cap Screws, Round Head Set and Cap Screws, Square Head Set and Cap Screws, Machine Bobbins, Gun Screws, Agraffes, Studs,

And other articles turned from Steel, Iron or Brass by automatic machine.

HARTFORD, CONN.

Our facilities are unequaled—the largest establishment of the kind in the country.

FILES & RASPS,

Established 1865.

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

No. 1 Commercial Street, Newark, N. J.

SPENCER & UNDERHILL,

94 Chambers St., New York, Agents for

American Screw Co.'s Wood Machine and Rail Screws, Stove and Tire Bolts, Rivets, &c.

G. F. Warner & Co.'s Carriage Clamps.

DEPOT FOR

O. Ames & Son's Shovels, Spades and Scoops.

A. Field & Son's Tacks, Brads, Nails, &c.

Nicholson File Co.'s Files and Rasps.

W. & S. Butcher's Chisels, Gouges, Plane Irons and Cleavers.

E. W. Gilmore & Co.'s Strap and T Hinges.

Russell Jennings' Auger and Dowel Bits.

Also a general assortment of Hardware.

THE GIANT PAD LOCK.

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

"Superior in Every Respect."

This is one of the **best selling Locks** in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited. Address as above

Lock Box 1705, Bridgeport, Conn.

PRIZE MEDALLISTS:

Exhibitions of 1862, 1865, 1867, 1872, 1873, and only award and medal for Noiseless Steel Shutters at Philadelphia, 1876, and Paris, 1878.

CLARK & CO.,

Original Inventors and Sole Patentees of

Noiseless Self-Coiling Revolving

STEEL SHUTTERS,

FIRE AND BURGLAR PROOF.

ALSO IMPROVED

Rolling Wood Shutters

Of various kinds. Endorsed by the **Leading Architects of the World.**

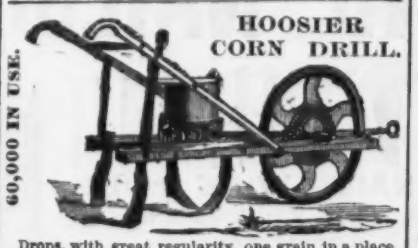
Send for Catalogue.

Office and Manufactory,

162 & 164 West 27th St., N. Y.

HOOSIER CORN DRILL.

60,000 IN USE.



Drops, with great regularity, one grain in a place, either 12, 16 or 20 inches apart, does the covering uniform in depth and is both time and labor saving. It gives to each stalk its full share of plant food, by which the quality is improved and the yield increased from 10 to 20 bushels per acre over hilled corn, hence is a splendid selling implement. Agents wanted in unoccupied territory. Send for circular.

Hoosier Drill Co., Richmond, Ind.

THE "EDDY" STRAIGHTWAY

VALVES.

ALSO,

FIRE HYDRANTS.

Axe, Hatchet, Powder and Brush Machinery.

MOHAWK & HUDSON MFG. CO.,

WATERFORD, N. Y.

BENTON, FAULKNER & BIRD, N. Y. Agents.
PANCOAST & MAULE, Phila. Agents.

R. COOK & SONS.

Manufacturers of

Carriage & Wagon AXLES.

WINSTED, CONN.

ESTABLISHED 1839.

HOWSONS'

OFFICES FOR PROCURING

UNITED STATES AND FOREIGN

PATENTS,

Forrest Buildings,

19 SOUTH FOURTH ST., PHILADELPHIA, AND MARBLE BUILDINGS

605 Seventh St., (Opposite U. S. Patent Office), ***Washington, D. C.***

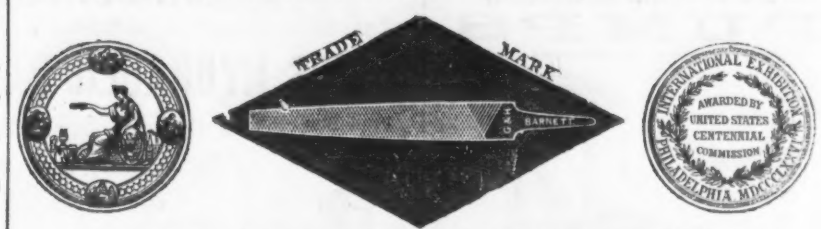
H. HOWSON, Solicitor of Patents. | C. HOWSON, Attorney at Law.

Communications should be addressed to the PRINCIPAL OFFICES, PHILADELPHIA.

PATENTS.

THOMAS D. STETSON, 23 Murray St., N. Y., Patent Solicitor and Expert.

Black Diamond File Works.



Awarded by Jurors of Centennial Exposition, 1876, for "VERY SUPERIOR GOODS."

G. & H. BARNETT

39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted CAST STEEL. 187 Tenth Street, Williamsburgh, New York.

All descriptions of Files made to order. Price List mailed on application. Established 1863.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

GRAHAM & HAINES,

P. O. Box 1040. **113 Chambers and 95 Reade Streets, New York.**

HARDWARE MANUFACTURERS' AGENTS, as follows:

Lawrence Curry Comb Co., Curry Combs.
Howard Bros. & Co., Cotton, Wool and Curry Cards
Thompson, Derby & Co., Scythe Snaths.
Otsego Fork Mills, Steel Forks, Rakes, Hoes, &c.
H. Knickerbacker, Scythes, Axes and Tools.
H. W. Kipp, Nail Hammers.
Kloman, Park & Co., Vises, Picks, Mattocks, Grub Hoes, &c.
Jacobus & Nimick Mfg. Co., Locks, &c.
Sandusky Tool Co., Planes and Plane Irons.
Geo. M. Eddy & Co. Measuring Tapes.
Wheeling Hinge Co., Hinges and Wrought Butts.
Northwestern Horse Nail Co. Horse Nails.
A. G. Coes & Co., Coes' Genuine Screw Wrenches.
F. K. Silby, Emery Cloth.
Holroyd & Co., Stocks & Dies.
Sedgwick Mfg. Co., Butter and Flour Triers, etc.
Ripley Mfg. Co., Mouse Traps.
Sam'l Loring, Plymouth Tack & Rivet Works.
Carr, Crawley & Devlin, Miscellaneous Hardware & Cast Butts.
J. Mallinson, Cast Steel Shears and Scissors.
Ketchem's Pat. Metallic Sieves.
W. D. Turner & Co., Geneva Hand Fluters.
American Screw Co., Gimlet Pointed Screws, &c.
Romer & Co., Brass Locks, &c.
P. Lowentraut, Compasses, Callipers, Dividers, &c.
Clark Bros. & Co., Carriage Bolts, &c.
Lowerre & Tucker, the Genuine Knox Fluting Machine.
T. B. Barclay, "Dodge's" Kentucky Cow Bells.
Lane Bros., Swift's and Grocers' Coffee Mills and Measuring Faucets, &c.
T. C. Richards Hardware Co. Bright Wire Goods, Picture Nails, &c

---

THE AMERICAN MACHINE CO.,

Manufacturers of

HARDWARE SPECIALTIES.

Office and Factory: *No. 1916 to 1924 North 4th St., Philadelphia.*

Branch House: *No. 128 Chambers St., New York.*

SPECIALTIES: Fluting Machines, Hand Fluters, Plaiting Machines, Christmas Tree Holders, Bickford Portable Pump, Mrs. Potts' Patent Cold-Handle "Crown" Irons, &c., &c.

Morse Twist Drill and Machine Co.,

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

Beach's Patent Self-Centering Chuck, Solid and Shell Reamers.

BIT STOCK DRILLS,

Drills for Coes, Worcester, Hunter and other Hand Drill Presses, Beach's Patent Self-Centering Chucks, Center and Adjustable Drill Chucks, Solid and Shell Reamers. Drill Grinding Machines. Taper Reamers, Milling Cutters and Special tools to order.

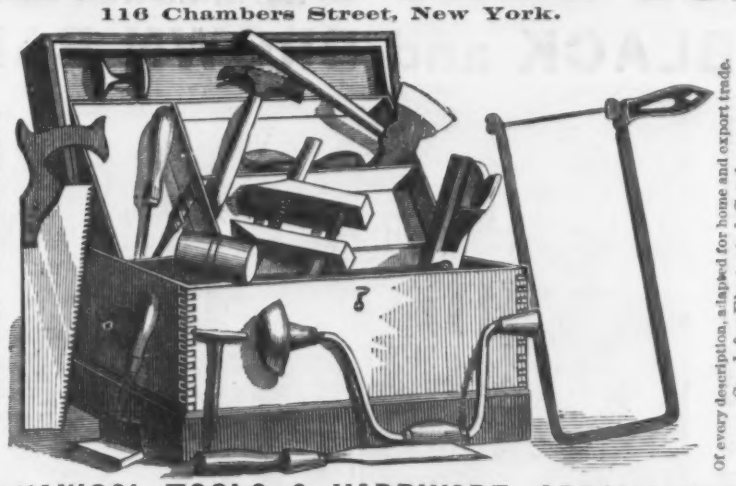
All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

AMERICAN TOOL CO.,

116 Chambers Street, New York.

MANUFACTURERS OF TOOL CHESTS



Of every description, adapted for home and export trade. Send for Illustrated Catalogue.

MECHANICS' TOOLS & HARDWARE SPECIALTIES.

TACKS, NAILS & RIVETS.

Shoe Nails, Shoe Tacks, Hungarian and Hob Nails, &c.

New York Salesroom, 116 Chambers Street.

AMERICAN TACK CO., Fairhaven, Mass.

boring apparatus recently employed is capable of piercing from 30 to 40 feet per day, whereas with the old machinery hitherto in use, no more than 2 or 3 feet could be perforated. The annual yield of the Hanover wells at the present rate is estimated at 10,000 cwt. per annum. Recent dispatches announce that the developments at Hoelle, near Heide, 31 miles N. N. W. of Glueckstadt, have been very promising.

Mechanical Engineering.—Its Scope and Its Importance.

At a meeting called recently to effect a preliminary organization of a society of Mechanical Engineers, Mr. A. L. Holley, well known as one of the leading engineers of this country, was called upon to preside, and delivered an address from which we take the following:

We define engineering as the science and the art of utilizing the forces and materials of nature; and we observe that this utilization is accomplished in all or nearly all cases, either directly by machines, or by processes working through machines. I confess that in thinking over the range of mechanical engineering, with reference to our proposed society, I was astonished at its magnitude; I had never realized it before. In that branch of the profession distinctively called civil engineering, and pertaining to fixed works, how largely mechanical engineering underlies both the structure and its uses. Take the canal; it is built by the steam dredging machine, the machine drill, the steam pump, the steam derrick, the temporary railway with its locomotives and cars. The completed canal is operated by the boat, which is equally machine built, and usually steam propelled. The masonry fort and the masonry lighthouse are essentially military engineering works; but, however much science their planning may involve, their construction is mechanical engineering, by means of the machine drill, the steam derrick and steam transportation.

In bridge building, the expert tells us that the strain-sheet is now the difficult matter, and that success chiefly lies—1st, in good methods of joining the parts with reference to strain and expansion, and 2nd, in the adaptation of special tools and facilities for shaping and preparing the work cheaply, and without injuring it. This is all mechanical engineering.

I would not underrate—I cannot too highly magnify—the wide and profound scientific knowledge employed in locating and planning these vast works of civil engineering—the canal, the harbor, the railway, the tunnel, the pier, the breakwater. I only emphasize the fact that our own profession of mechanics and dynamics underlies their construction and utilization—it is the intermediate power between nature, on the one hand, and the artificial structure and the artificial work done, on the other hand.

Passing, now, to that immense department of engineering—mining and metallurgy—it is almost astonishing to find how completely mechanical means and processes produce its results. Geological exploration of the most highly scientific character is essential; but the hydraulic engine, the machine drill, the steam pump, the steam hoist and steam transportation perform the work.

In metallurgy a few characteristic examples show the universal imprint of our profession. The analyses of ores, fluxes and slags are indeed indispensable; but it is the elaborate machinery of steam blowing, steam hoisting and transportation, and the vast mechanism of heating apparatus, that produce pig iron. The furnace, of whatever kind; the hot-blast stove, either of pipes or of bricks; the gas producer, the regenerator—in short, fire-brick construction at large is an important department of mechanical engineering. The Bessemer process is the grandest exhibition of practical chemistry to be seen in the world; but, as in invention, it is essentially mechanical, and the means of carrying it out involve elaborate and ponderous mechanism at every step—the 1000-horse blowing engine, the hydraulic lifting and moving apparatus, the interchangeable parts.

The rolling mill is throughout a series of machines, and much of their work is of the most difficult character; it has been improved by the highest mechanical ingenuity and experience, in many countries, and is still but on the threshold of its possible development. It involves the adaptation of steam engines and boilers under peculiar environment; of roll trains, which are by themselves a vast department of engineering; of power-handling, finishing and transportation, and of the utilization of fuel under varying circumstances and on a gigantic scale.

We need not dwell on the similar relations of mechanical engineering to the foundry, to the forge, and to such immense specialties in iron and steel as wire, horse shoes, bolts and nuts, springs, agricultural tools, cutlery and hardware at large. What thousands of special tools and machines picture themselves in our minds as we contemplate such manufactures as these!

The railway in structure and working is all machines and dynamics, however great may be the civil engineering ability displayed in its location and in the designing of its fixed works. Railway master mechanics form perhaps the largest defined class of mechanical engineers, and the chief engineers of railways, in their chief work of permanent way and bridge construction and maintenance, deal chiefly with our department of the profession.

The locomotive builder is called to practice mechanical engineering of the most refined and comprehensive type—the economical generation and use of steam in an almost flying vehicle of minimum weight and maximum power. And the number of his works is measured by tens of thousands. Does not the car builder also deal with machines on the most comprehensive scale—the innumerable wood-working tools and his special appliances of iron work? And speaking of wood-working tools, what vast mechanical ingenuity has been brought into service, and what vast interests are represented in the manufacture of wood in all constructive and ornamental forms, especially in the immense department of furniture.

In those leading departments of industry, which, at first thought, the public would deem quite outside of mechanical engineering, how completely is this art incorporated with their every detail. The manufacture of textile fabrics is a conspicuous example. However indispensable chemical guidance may be, the whole complex system, including the application of chemistry, is mechanical. The same is true of those vast departments of industrial art, the glass manufacture and, more conspicuously, the manufacture of paper. And is it not equally true in the case of gas making and electric lighting, of pottery and brick making, and of chemical manufactures at large?

What shall we say of architecture? There are the strictly æsthetical and mathematical elements, but the construction—quarrying and shaping, foundry and forge work, excavating and hoisting, are mechanical. Should the architect and the civil engineer say that the mere molding and assembling of members is not worthy of a professional name and status, the mechanical engineer may reply that the mere calculation of strains from known formulæ, and the mere grouping of conventional forms, is no more worthy. The genius that reaches the harmony of perfect construction and perfect beauty (which are interchangeable terms) in nature's inert materials, may not be loftier than that which as perfectly utilizes and governs her wild and capricious forces.

Modern agriculture is but a world-wide arena for the operation of machines, and these machines, and the machines that produce them, draw upon many departments of mechanical engineering.

National defenses, other than old style forts, are among the most conspicuous types of machines; for the modern war ship, the modern gun and the modern small arm, are nothing but machines of the highest classes. The almost incredible endurance and accuracy of modern ordnance have been achieved, as their grandest work, by mechanical engineers who were most successful in other departments of their art. Shipbuilding, even more than bridge building, is conspicuous within the range of our profession.

But if the works and industries we have enumerated are the results of mechanical and dynamic science and art, what shall we say of the steam boiler and engine—of the adaptation they involve of materials to the economical utilization of force—of machines to the economical production of complex enginery? This greatest department of mechanical, and purely mechanical science, is alone a sufficient basis for the establishment of such an institution as that we have assembled to organize.

INDUSTRIAL ITEMS.

MAINE.

The scythe shop at North Wayne, which was begun in October last, is very nearly completed, with all machinery running. It is owned and run by the Bodwell Granite Company, of Hallowell, who contemplate at an early date making axes, which, in connection with the scythe business, will employ some 25 men.

MASSACHUSETTS.

The Holyoke Machine Company have some 40 "Hercules" water-wheels ordered ahead, and are driven also in all other departments of their business.

The Douglas Ax Company, of Douglas, are to add new machinery to their works, and will some time the coming spring build an addition the entire length of the head shop, for the purpose of putting in a number of light trip hammers, which will do the heavy part of the work now done by hand.

A shears bed, one of the largest of its kind, weighing 11,660 pounds, was cast recently at the Bridgewater Iron Works for the Wareham Nail Company, of South Wareham.

CONNECTICUT.

The Winchester Repeating Arms Company, at New Haven, is said to have received an order from the Chinese government for 17,000,000 cartridges.

NEW YORK.

Mr. James Lancey, who has for several years represented William Jessup & Sons, of Sheffield, in this market, terminated his connection with that house on the 4th inst., and will hereafter, in association with Mr. Richard G. Park, conduct the business of the New York branch of the Black Diamond Steel Works of Park, Brother & Co., of Pittsburgh.

A blacksmith's bellows known to be 90 years old was sold at auction at Seneca Fall recently.

The Buffalo Pipe Line Company have succeeded, after fighting against many obstacles in obtaining a complete right of way from Buffalo to the Bradford (Pa.) oil district. The main line will be about 65 miles long. The pipe will be 4 inches in the clear, and it will require about 7000 barrels of oil to fill it.

The working force of the Dunkirk Locomotive Works has been increased from 300 to 500 men, and in order to fill existing contracts, it will be necessary to construct nine engines per month for the ensuing four months.

NEW JERSEY.

At the extensive works of John A. Roebling's Sons Co., manufacturers of iron and steel wire rope, at Trenton, between 600 and 700 hands are employed. The works are now running on full time, the product being at the rate of 5000 tons per annum. The finest grades of wire are made from Swedish iron mixed with scrap.

The New Jersey Steel and Iron Company, Trenton, have a capacity of 20,000 tons a year, and employ 825 hands. They are now running on full time, making beams, angle and merchant iron, and at present are filling a heavy contract for the Brooklyn elevated railroad, which will take four months to complete. This company have furnished most of the iron for various new post offices throughout the country, for the Patent Office, War and Navy Departments at Washington. They have just shipped an iron bridge for the Lake Erie and Western Railroad, and will complete in a few days another one for the same road. An iron pier, weighing 200 tons, has just been com-

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGAL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY COMPANY.

The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Table Cutlery. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application.

SALESROOM, No. 49 Chambers St., N. Y. Address all communications to West Meriden, Conn.

THE

LAMSON & GOODNOW MFG. CO.

88 CHAMBERS ST. N.Y.

AMERICAN TABLE CUTLERY &c.

AARON BURKINSHAW,

Manufacturer of **Pen and Pocket Cutlery,** Pepperell, Mass. **Established 1853.**

My Blades are forged by hand from the best Cast Steel, and warranted. To me was awarded the Gold Medal of the Conn. State Agricultural Society.

Fine Gray Iron Castings.

Fine Plain and Ornamental Metal Patterns made to order at our new foundry, Knowleton St., E. D. Address

THE RENZ HARDWARE CO.,

Bridgeport, Conn.

HENRY SEYMOUR CUTLERY CO.

Manufacturers of Full Nickel Plated and Maroon Japan Handle

SHEARS AND SCISSORS.

Every pair warranted. Sold by Hardware Dealers throughout the country.

Salesrooms, 84 & 86 Chambers Street, New York City. Manufactory, HOLYOKE, MASS.

JOHN WILSON'S CELEBRATED

TRADE MARK.

"FOUR PEPPERCORNS AND A DIAMOND"

GRANTED A D 1766 BY THE CORPORATION OF CUTLERS OF SHEFFIELD AND PROTECTED BY ACT OF PARLIAMENT

REGISTERED ALSO AT WASHINGTON U.S.A. ACCORDING TO ACT OF CONGRESS

ALSO AT LEIPZIG, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT.

BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1760

BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

PLANE IRONS.

Gouges of all lengths and circles beveled inside and outside. Nail Sets, Scratch and Belt Awls, Chisel Handles. A full stock of Carving Tools. Also, small boxes of Tools of best quality.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

Maker and Patentee of the Improved

Hydraulic Jacks

AND

Punches.

Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Picks,
Box Chisels and Scrapers,
Ring Bush Hooks,
Ax Eye Bush Hooks,
Socket Bush Hooks,
Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 96 Chambers Street, N Y.

Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y.,

Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK,

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3962.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
BUTCHER'S FILES, TOOLS AND RAZORS.
STUBS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS.
BRADES' TROWELS AND HOES,
CANASTOTA KNIFE CO.'S POCKET KNIVES.
Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

ROBERT SORBY & SONS,

SHEFFIELD,

MANUFACTURERS OF THE CELEBRATED

Kangaroo Sheep Shears,

The best Shears made.

Every Shears Guaranteed.

ALFRED FIELD & CO.,

93 Chambers St., - NEW YORK,

SOLE AGENTS.

Send for price list and terms.

Cutlery.

McCOY & CO.,

IMPORTERS OF

Hardware, Cutlery, &c.

SOLE AGENTS FOR

THEILE & QUACK'S

CELEBRATED

Pocket Knives and Scissors.

A large stock of

Muzzle & Breech Loading

English Guns.

132 DUANE ST.,

NEW YORK.

Silver Medal, 1878—Paris.

J. R. SPENCER & SON,

Albion Steel Works, Sheffield,

MANUFACTURERS OF

FILES AND STEEL,

Table Knives, Razors, Shovels, &c., &c., of every description.

CORPORATE MARK.

SPENCER SHEFFIELD

Granted 1749.

SCHRODER LOCK CO.,

Manufacturers of

BUILDERS' HARDWARE,

Locks, Latches, HINGES, AND BRONZE & BRASS GOODS Of all kinds.

JAIL LOCKS.

Office and Works,

16 & 18 East 7th Street,

CINCINNATI, OHIO.

A liberal discount to the trade.

PHŒNIX CASTER CO.,

Indianapolis, Ind.

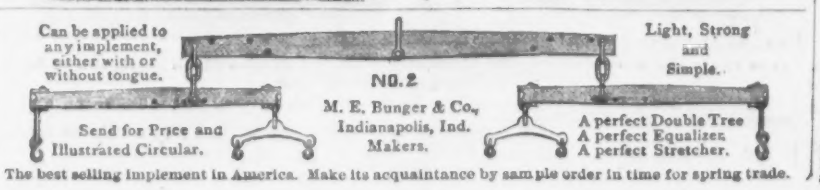
Send for Illustrated Catalogue.

Patented, Feb. 13, 1872. Oct. 1, 1878. July 1, 1879.

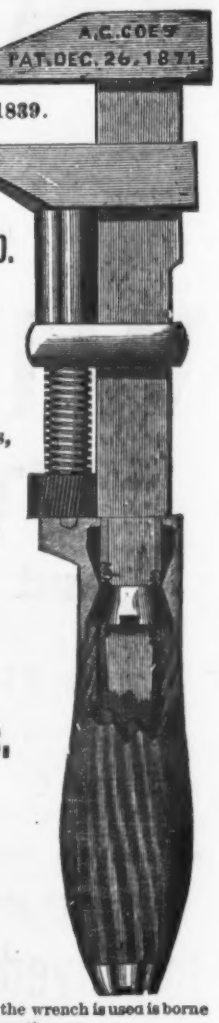
Mounted on Martin's Patent Caster.

Eight thousand sold the first year.

TUCKER & DORSEY, Mfrs., Indianapolis, Ind.



The best selling implement in America. Make its acquaintance by sample order in time for spring trade.



Established in 1839.

A. G. COES & CO.

WORCESTER, MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw Wrenches.

PATENTED,

May 9, 1871.
December 26, 1871.
December 28, 1875.
August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

None genuine unless stamped

A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

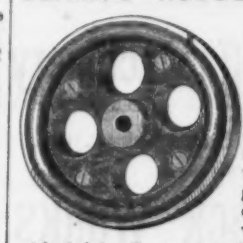
CLOTHES WRINGERS.

Self-Adjusting Steel Elliptic Springs.

T. J. ALEXANDER, Manager,

BOSTON, MASS.

CLARK'S RUBBER WHEELS.



This wheel is the best now in the market, and is attracting the attention of large manufacturers on account of the great saving of floors, which is ten times greater than the extra cost of this wheel.

Adapted to all purposes, viz., Warehouse trucks, platform trucks, scales, boxes, baskets and heavy casters. For full particulars see the first issue of *The Iron Age* next month, or address

GEO. P. CLARK, *Windsor Locks, Conn.*

MICA.

SUPERIOR QUALITY

North Carolina MICA.

We are prepared to furnish

Stove Manufacturers,
Oil Stove Manufacturers,
Jobbers and Retail Dealers,

WITH

MICA

of very best quality.

Estimates furnished on application.

J. S. & M. PECKHAM,

Utica, N. Y.,

Miners and Wholesale Dealers in Mica.

JAMES COMLY,

4739 Paul St., Frankford, Philadelphia, Pa.,

Manufacturer of

Hardware Novelties, Glass Cutters, &c.

GEO. M. EDDY & CO.,

Manufacturers of

Measuring Tapes

Of Cotton, Linen & Steel.

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn, N. Y.

CHAS. E. LITTLE,

59 Fulton St., N. Y.

Solid Cast-Steel Pump Augers

For Boring Pump Logs and Pump Tubing, with all necessary fittings. Agency for **Barnes' Wood-Working Machinery and Lathes.**

pleted for the Baltimore and Ohio Railroad, and a bridge for the city of Baltimore is nearly finished. The iron roof for the new Capitol at Albany was also constructed here. The firm are also engaged in making chains and horseshoes of a new pattern for Boston parties.

The Phœnix Iron Company at Trenton are manufacturing large quantities of iron-work for various parts of the country. They are making the architectural iron-work for the Patent Office at Washington. A part of this work includes an iron ceiling, 19 by 35 feet, which is to be placed above the landing of the main stairway. It weighs 12,000 pounds, and is finished in nine panels, five of which have handsomely ornamented rosettes that are to serve as ventilators. They are also making the columns and stairs for the Washington Monument at Washington, and the iron roof frame for the new post office and court house at Nashville, Tennessee. Two large Union boilers for the water works at New Brunswick, N. J., are nearly completed, as are also the castings for the Brooklyn elevated railroad. There has just been completed a heavy iron cylinder, 6 feet in diameter and weighing 12,000 pounds, to be used for crushing or reducing flint and spar to powder, for the use of potteries. The new lighthouse about to be erected on the American Shoals, Florida, was built by this company. It is 140 feet high.

Fisher & Norris, of Trenton, employ 40 hands on full time. Their anvils are made of gun metal, and the horn and face of cast steel, welded firmly to the body of the anvil. The firm also make what they term parallel "leg" vises, in which parallel action is obtained by causing the lower end of the front jaw to have the same movement as the upper part, instead of opening on a hinge, thus bringing a square pull on the thread of the back jaw. Another specialty of this firm is the manufacture of the "Fisher" rail joint.

The Trenton Iron Company, of Trenton, manufacture iron and steel wire, bar iron and rods, and produce about 300 tons per week, employing 450 men. There are in the works trains of rods for the manufacture of wire for all purposes. The qualities made include wire for binding grain, for bonnets, for hair pins, for telegraphing, &c. The firm some time since placed in the mill a fast engine for running a new rod train. It has a cylinder 20 inches in diameter and 42-inch stroke, and makes 150 revolutions per minute, while the piston makes 1000 feet per minute. This new rod train is worked on the Belgian system. The billets of iron are first broken down into 12-inch rods and then finished in a series of 10-inch rods. The 12-inch merchant train is also run by the fast engine.

The American Saw Company, of Trenton, have 69 men now employed in the manufacture of all kinds of saws, but more particularly the new movable toothed saw. The teeth are shaped so as to present the points to the timber like the edge of a planing chisel, cutting the timber into shavings, instead of scraping it off into fine dust. The saw is so made that the teeth can be removed and new teeth inserted upon the original blade. These teeth are also applied to circular saws.

At the steam engine and boiler works of Mackenzie & Wilkes, at Trenton, 50 men are employed, and about 36 tons of iron-work is turned out weekly, principally in machinery for potteries.

PENNSYLVANIA.

A charter was granted on the 5th inst. to the Connellsville Coke and Iron Company, whose purpose is to manufacture iron and steel in Fayette County. The capital stock is $1,000,000, divided into 20,000 shares. The corporators are 27 in number, about one-half of whom are residents of Philadelphia and Mauch Chunk. The prominent stockholders are John Leisenring, of Mauch Chunk, and John C. Bullett, of Philadelphia, each of whom owns $60,000 worth of stock. A majority of the corporators own $30,000 each. The amount of stock paid in is about $160,000.

Messrs. Clingan & Son, proprietors of the Hopewell Furnace, Chester County, are clearing a large tract of woodland on Chestnut Hill, preparatory to converting the wood into charcoal. Repairs are being rapidly pushed forward, and in the course of this month the furnace will be in active operation.

The Mount Union *Times* says workmen are busily engaged in putting Matilda Furnace in working order, and it is expected that blast will be put on early in April. Extensive improvements are being made, including the replacing of the old boilers by four new ones. There will also be a steam crusher erected for the purpose of crushing the hard fossil ore, which is mined within a few rods of the furnace. The improvements that are being made will, it is stated, increase the capacity of the furnace to 100 tons of pig iron per week.

The Nail Works, Towanda, are now in operation.

The repairs, enlargements and additions to the Price Furnace, at Harrisburg, are now approaching completion, and the expectation is that the furnace will be blown in some time this month.

The No. 1, Old Hampton, furnace of the E. & G. Brooke Iron Co., which has been out of blast for six years, has been repaired, and was to have blown in last week. The last blast was made on anthracite coal, but the stack has undergone the necessary operations to make charcoal iron. About 1000 cords of wood are ready for use. Among the repairs made was the building of a new coal house, a stock house, and a bridge house. Improvements have also been made on the casting house.

PITTSBURGH AND VICINITY.

The Duquesne Engine Works, James Rees, proprietor, have been awarded a contract by the government for four steamers to be used in connection with the United States Medical Service and by the National Board of Health. All four are to be completed by June 10, 1880. The first is an iron stern wheeler, 110 feet long, 18 feet beam, 4 feet hold, two athwart-ship bulkheads and one fore-and-aft bulkhead syphon in each apartment. Engines 13 inches in diameter, 5 feet stroke, with all the modern improvements. Two steel boilers, 42 inches in diameter, 22 feet long, 6 flues each; iron wheel and pitmans. There will be a full length cabin for the accommodation of sick, officers' quarters, &c. The entire boat complete is to be delivered at the Pittsburgh wharf, and a trial trip is included with the contract. The next part of this contract provides for three iron propellers, or launches, each 35 feet long, 7 feet beam, 3½ feet hold, fitted up for passengers. Upright boiler and engines, propeller wheel, which is to be of iron. There is also to be a disinfecting tank fitted up with steam connections, for medical use. The iron boat is guaranteed to make 12 miles per hour, and the steam launches 9 miles. The Duquesne Engine Works are busy upon local jobs for steamboats under way, and are working to their full capacity.

Anderson & Co.'s open-hearth furnace, which has been idle for repairs, started up on the 8th.

The Light Locomotive Works of Porter, Bell & Co. have an order for ten new engines.

Lindsay & McCutcheon, of the Star Iron Works, Manchester, are running full, employing 300 hands. They have many orders in hand for hoop iron for whisky and provision barrels for Western distillers and packers.

At the Keystone Iron Works of Williams, Long & McDowell, the plate mill has been started up after a week's idleness, the two heating furnaces connected with it having been rebuilt. They are now running full in all departments.

The following statement is from the Pittsburgh *Dispatch*:

RAW IRON RECEIPTS FOR JANUARY AND FEBRUARY FOR THE PAST TWO YEARS.

Material.	1879. Jan.	1879. Feb.	1880. Jan.	1880. Feb.
	Tons.	Tons.	Tons.	Tons.
Pig Iron	18,807	20,177	40,526	37,976
Iron Ore	25,248	24,080	38,582	24,041
Scrap Iron	3,461	3,560	6,133	3,735
Blooms and Billets	2,908	3,619	1,805	1,620
Old Rails	324	1,231	11,468	8,335
Cinder	976	1,286	1,044	1,521
Muck Bar	.....	.....	342	180
Total	56,724	53,833	99,100	79,408

The A. V. R. R. shops have turned out a new train of cars for the convenience of trackmen. The train is composed of an office, kitchen, dining, storehouse and two sleeping cars, all supplied with the necessary contrivances for the comfort and convenience of the men. The cars resemble a caboose, but are somewhat larger.

The Elba Bolt and Iron Company are now putting in a 16-inch train of rolls, with an engine to run it. A new wing is to be added at the west end of the works, to which the guide mill will be removed, and it will also cover a new heating furnace. They are now running 23 puddling furnaces, five heats per turn, and employing about 150 men. The puddle mill is going double turn; the bar mill and 10-inch mill single turn. They have a demand for their entire product, which is shipped as fast as ready. The addition to the mill will probably be ready to go into service in about six weeks.

Moorhead & McCleane's Soho Furnace is again in full blast, having been banked up for a few days to await the outcome of the labor trouble in the coke region. Their rolling mill is also in full operation, double turn.

The average daily output of the A Furnace of the Edgar Thomson Works for last week was 84 tons. This furnace has not yet equaled her output of the 24th ult., when she made 102 tons, making during the week, 639¾ tons. Furnace B, 20 x 80 feet, will probably go into blast in less than two weeks.

OHIO.

The Telegraph Supply Company, of Cleveland, are running night and day with a force of 100 men. They are working exclusively on Brush electric light apparatus, and have orders on hand for months ahead. They have recently made important additions to their manufacturing facilities.

The Etna Mill, Martin's Ferry, continues running to its fullest capacity. It is said that this mill has already enough orders on hand to keep it running steadily until July.

All the iron works at Cincinnati are working double turn.

The Tyler Hoe and Tool Works, Ironton, now have on three forges and two steam hammers, and are running full force.

The Franklin Furnace, at Columbus, is being put in order to go into blast the latter part of this month.

Blast Furnace No. 2, of the Jefferson Iron Works, Steubenville, was blown in Wednesday, after being idle for several years.

Brown, Bonnell & Co., of Youngstown, are about to increase their capacity in the nail department. A number of machines will be put in as soon as the contemplated addition is made to their buildings.

INDIANA.

Ohio Falls Iron Works, of New Albany, with a 16-inch and an 8-inch train, and 15 puddling and three heating furnaces, turned out 758 tons of finished iron in February. The output of the other mills of New Albany and Louisville has been proportionately large.

ILLINOIS.

Wells, French & Co., Chicago, are building 500 freight cars for the Atchison, Topeka and Santa Fe Railroad.

The Barnum Richardson Mfg. Co., Chicago, have just moved to their new works which they built seven years ago, but have never before occupied.

MISSOURI.

The Sligo Furnace Company have recently been organized, the directory including a part of the stockholders of the Missouri Iron Company, with several other persons. They are building the largest charcoal furnace in the State, at Salem. It will have an 11-foot bosh; hight, 55 feet. Its capacity will be 45 tons of pig iron per day. The company have 200 woodchoppers at work, and they expect to have the furnace ready for operation in July.

The Scotia Iron Company, which opened the Scotia mines about nine years ago, have completely exhausted the banks, and blew out their furnaces recently. They will entirely

close up the business. During the nine years of their operation they turned out about 75,000 tons of the best quality of charcoal Bessemer iron. The gentlemen comprising the firm retire with a handsome financial result of their nine years of labor. It has been stated that this furnace paid for itself in the first year of its blast.

There is now but one charcoal furnace in this State, the Midland, which is in good order and blowing.

The first ton of pig iron made in the State of Missouri in a stonecoal furnace was in the year 1867. At that time there were several charcoal furnaces, but no attempt was made to manufacture iron by the use of stonecoal until the example was set by the Grand Tower Mining Company, at that time under the management of Andrew C. Bryden. Mr. Bryden believed the time had already come when charcoal could not be depended upon as a fuel for the manufacture of iron, and in accordance with such conclusions he set to work to transform the old and dilapidated Carondelet Furnace into a modern institution. His efforts were successful, and it was not long until other new furnaces were built and old charcoal furnaces made into stonecoal furnaces. Of the eleven stonecoal furnaces in the vicinity of St. Louis, all were built subsequent to the introduction of stonecoal into the Carondelet by Mr. Bryden, and their construction is essentially based on the results obtained by the Carondelet Furnace.—*Journal of Commerce.*

KENTUCKY.

Iron Hill's Furnace is doing well, making 12 tons No. 1 pig iron per 24 hours.

Clear Creek Furnace, in Bath County, is to be put into operation this season.

Hunnewell Furnace blew out Monday before last, having been in blast since the 19th or 20th of July last. During this run she made over 3500 tons of iron.

LABOR AND WAGES.

The employees in the rolling mill of E. & G. Brooke, at Birdsboro', Pa., were on strike for higher wages, the strikers also including the men in the nail and plate mill. An advance of 20 per cent. was demanded. The puddlers at the same place had given two weeks' notice of their intention to strike unless their demand for higher wages was complied with. A compromise on a basis of an advance of 10 per cent. was effected and the men retured to work on the 8th inst.

The puddlers at Atkens' Fishback Rolling Mills, Pottsville, Pa., struck, on the 1st inst., for an advance of 75 cents per ton.

The Vulcan Steel Works, at Carondelet, St. Louis, after several months' preparation, were ready to resume operations on the 1st inst., but before starting up Superintendent Duncan notified the employees that they would be required to sign a contract governing their relations with the company before work commenced. This the employees refused to do, and, on being informed that the contract was the company's ultimatum, all the men in the converting, blooming and rail works immediately struck. The main features of the contract are that the men shall work for and be governed by the scale of prices in force at the Edgar Thomson Steel Works, at Pittsburgh; that they shall not hold the company responsible for accidents; that they (the men) shall be responsible for loss or breakage of tools, &c., and that they shall not join any trades union or other similar secret society. The agreement to continue one year. The hands in the furnace and departments connected therewith did not strike, and received on demand an advance of 25 per cent. on their wages. Superintendent Duncan says the action of the strikers will not cause any trouble to the company. The strikers say they are willing to work for the same prices paid at Chicago or Joliet, Ill.

An amusing illustration of the peculiar ways of strikers comes from the mines of the Houtzdale, Pa., region. The coal miners demand an advance of 10 cents per ton, and this might be granted if the operators could have assurance that it would finally settle matters. But there have been nine strikes in three months. First they struck for a check weighman, upon the plea that the operators were cheating them. This was granted, with the proviso that the weighman should be paid by the men themselves. Then they struck to have the said weighman placed upon the company's payroll, and carried that point. Then the drivers struck for an advance of 25 cents per day, and got it. Then the trappers struck for an advance of 10 cents per day, and got it. Then the miners struck for 10 cents per ton advance for mining, and got it. Then the drivers struck for an advance of 25 cents per day, and for "10 hours," and got both their claims allowed. Then the miners organized the present strike, and the drivers propose to follow suit. In view of these constant and repeated demands, the operators have come to the conclusion that it is necessary to draw the line somewhere. In fact, if the thing is to go on, the mines themselves might as well be deeded as a free gift to the workmen. For it is impossible to carry on any business successfully or even intelligently if wages are thus to be kept uncertain, and always on the rise at that.

It is reported that the miners' union in the anthracite region of Pennsylvania has been revived.

The wages of the men employed in two ax works at Ballston Spa, N. Y., have been raised 10 per cent.

Labor troubles appear to be thickening about the iron mills of the Schuylkill Valley, Pa. It is reported that some 200 men were thrown out of work by a strike for 10 per cent. advance. It is calculated that 1500 men are out in the Schuylkill Valley.

A rumor is current that the coal operators on the Monongahela River are considering the advisability of reducing the price of mining to three cents, they claiming that at the present selling price of coal in the lower market there is no money in the business with digging at 3½ cents. It is believed that when all the empty craft in the pools is loaded something definite will be done.

A number of English ironworkers have arrived with their families at Pittsburgh. They say that times are still hard in England, notwithstanding the improvement reported in the iron trade.

The miners of the Marmet pits, on the Kanawha, recently went out for 3½ cents, and instead of agreeing to the advance the company decided to send some barges up the Monongahela to be loaded, in order to fill contracts. The barges are still empty at their moorings in the Monongahela, Secretary Jones having issued orders to the men in this district not to fill an M. M. Co. barge, by which means he expects the Kanawha firm will have to put back their miners at the advance.

The puddlers at Pencoyd Mill, near Philadelphia, are on a strike for $6.

The Rome (N. Y.) merchant iron mills have been paying $5.75 for puddling since February 1st.

The striking puddlers at the Palo Alto Mills, Pottsville, Pa., resumed work on the 8th inst., on a basis regulating their wages in accordance with the price of rails. This gives them nearly the advance asked for.

About 200 hands, the employees of the zinc works at Bayonne, N. J., struck on the 6th inst. for higher wages, demanding 10 per cent. advance over their old wages. The company made the concession and the men returned to their work.

The employees of the Reading Hardware Company, operating three large foundries at Reading, Pa., have demanded an advance of 25 per cent. in their wages, and threaten to strike if a favorable reply is not given by the 10th inst. The men obtained an increase of 25 per cent. only a short time ago, and the firm express the opinion that they will now be compelled to discontinue operations.

The puddlers of the Tredegar Iron Works, Richmond, Va., have been advanced to $6 per ton.

The puddlers of Cohoes, N. Y., are now receiving $5.75 per ton.

The coal mines in the Belleville, Ill., coal mining district struck for 4 cents for digging some time ago, and secured the advance, while the miners in the adjoining districts continue to work for 2½ cents. The result is that the miners in the Belleville district are doing but little work, the operators filling their contracts with coal from the adjoining districts.

An organization to be known as The National Labor League has just been formed at Pittsburgh. It is an association of workingmen of temperate, frugal habits, ambitious and intelligent, to put an end to strikes, create amicable relations between laborers and capitalists, and tend in a general way to that millenial condition which will make all men practically equal.

Nearly all the work in the iron mills of Cincinnati is now based on a sliding scale. At present card, 4c., boiling is $7; muck rolling, $1; bar mill rolling, $1.05; bar mill heating, the same; catching, 65⅝c.; scrapping blooms and sheet bar, $1.23; scrapping piles, $1.92; shingling, $1.05; guide rolling, 5 per cent. above Pittsburgh prices.

COKE ITEMS.

Coke making is to be one of the most important industries along the line of the Chesapeake and Ohio Railroad. Already there are four or five establishments in the New River District, each receiving orders beyond their capacity to supply. Fire Creek is running about 60 ovens, Quinnimont about 80 and Sewell about 50, which is exclusively appropriated to the use of the furnaces of the company at Longdale. Nuttalsburg is running about 60 ovens. Two others are in process of construction—one at Lowmoor, of about 40 ovens, for the use of the furnace at that place, now rapidly approaching completion, and another in the New River section, by Bramwell & Co., of about 200 ovens. This last will make coke for shipment.

A. O. Tintsman, of Turtle Creek, Pa., recently purchased of Peter Sherrick his one-half interest in the Rising Sun Coke Works, located on the June Bug Railroad, for the sum of $70,000. These mines are admirably located, being above water level, and the quality of the coal unsurpassed in the Connellsville region, containing, when manufactured into coke, 95 per cent. of carbon. Mr. Tintsman is very fortuuate in making so desirable a purchase.

There is a grand total of about 6000 coke ovens in the western part of the State of Pennsylvania.

The Orrell Coal Company have contracted for the erection of 50 coke ovens at Newburg, W. Va., and the company expect to erect a 40-ton furnace during the coming season.

We mentioned in our issue of two weeks ago that some coal from Ironton had been sent to Pittsburgh to be washed and coked. Mr. Willard, who had the operations in charge, has returned to Ironton, and reports the experiment a success. He brought home with him some very fine specimens of the coke.

The Missouri Furnace Company have entered suit against another coke works for failure to carry out a contract for coke, the defendant this time being J. M. Cochran. The amount of damages claimed is $100,000.

The "Bryden" coking ovens, located on the Big Muddy River, Ill., are being hurried on toward completion. There are in all 216 ovens, all of which are being constructed on an original plan of the projector, which gives the appearance of being both economical in construction and effective in manufacture. Though these ovens are located in the region of the Big Muddy coal, it is not intended to coke anything but "Bryden" coal from Williamson county. Manufacturers and furnace men are waiting with interest to see the result of these ovens, and when completed no difficulty will be found in disposing of the product.—*Journal of Commerce.*

The Grand Tower Coal Company have entered into arrangements to build on their land in Davis County, Ill., 80 coking ovens for coking Big Muddy coal. It is quietly said that arrangements were made with the Vulcan to use their coke before the project was consummated, a desire being felt to reduce the dependence that has been placed upon Pittsburgh coke and to make our furnaces independent of closed navigation in reference to their supply of coke.—*Journal of Commerce.*

The Iron Age

AND

Metallurgical Review.

New York, Thursday, March 11, 1880.

DAVID WILLIAMS - - - *Publisher and Proprietor.*
JAMES C. BAYLES - - - *Editor.*
JOHN S. KING - - - - *Business Manager.*

RATES OF SUBSCRIPTION
INCLUDING POSTAGE.

THE UNITED STATES, BRITISH AMERICA AND SANDWICH ISLANDS.

Weekly Edition.....**$4.50 a year.**
Issued every THURSDAY morning.
Semi-Monthly Edition.....**$2.30 a year.**
Issued the FIRST and THIRD THURSDAY of every month
Monthly Edition.....**$1.15 a year.**
Issued the FIRST THURSDAY of every month.

TO ALL OTHER COUNTRIES.
PER ANNUM. POSTPAID.

Weekly Edition: $4.00=£1=25 francs=20 marks=12 florins=6 roubles (coin)=25 lire=20 pesetas.
Semi-Monthly Edition: $2.50=10/=12½ francs=10 marks=6 florins=3 roubles (coin)=12½ lire=10 pesetas.
Monthly Edition: $1.25=5/=6¼ francs=5 marks=3 florins=1¼ roubles (coin)=6¼ lire=5 pesetas.

REMITTANCES

should be made by draft, payable to the order of David Williams, on any banking house in the United States or Europe; or, when a draft cannot be obtained, in postage stamps of any country.

NEWSDEALERS OR BOOKSELLERS

in any part of the world may obtain *The Iron Age* through the American News Company, New York, U. S. A.; the Wilmer & Rogers News Company, New York, U. S. A., and London, England; or the San Francisco News Co., San Francisco, California, U. S. A.

RATES OF ADVERTISING.

One square (12 lines, one inch), one insertion, $2.50; one month, $7.50; three months, $15.00; six months $25.00 one year, $40.00; payable in advance.

DAVID WILLIAMS, Publisher,
83 Reade Street, New York.

PITTSBURGH.....77 Fourth Avenue
JOS. D. WEEKS, Manager and Associate Editor.
PHILADELPHIA.....220 South Fourth Street
THOS. HOBSON, Manager.
CINCINNATI.....Builders' Exchange
T. T. MOORE, Manager.
CHATTANOOGA.....Eighth and Market Streets
S. B. LOWE, Manager.
BRITISH AGENCY.

The publishers of *The Ironmonger*, 44a Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

CONTENTS.

Just about a year since we had occasion, in the course of an editorial on the "Outlook for Lake Superior Ores," to refer to the probability of large shipments of foreign ores to this country in 1879-80, or in the year that would be covered by the shipments of Lake Superior ores, for which contracts were being made at the time our article was published—say from June 1st, 1879, to June 1st, 1880. This statement was based on information which we regarded at the time as trustworthy, but it was called in question by two correspondents. One of these suggested that our "very wonderful figures as "to the quantities of foreign ores purchased, "or about to be purchased by various "firms," should be taken *cum grano salis*, and the other that 100,000 to 150,000 would probably be the utmost that could be brought into this country yearly. Now let us see what are the facts of the case. Upon inquiry at the Bureau of Statistics we learn that the imports of iron ore into the country for the six months ending December 31st, 1879, were 180,721 tons, and for the month of January, 1880, 32,366. This is at the rate of over 300,000 tons a year, and abundantly substantiates our information. We are not advised as to the particular source from which this ore was drawn, but the larger part was brought across the Atlantic, very little coming from Canada.

The Outlook for the British Iron Trade.

In an editorial on "The Iron Outlook," published in our issue of February 12, we called attention to the precarious position of the British market, due to the fact that the advance in prices seemed to be almost wholly speculative, and was, to all appearance, sustained chiefly on the strength of the improvement in this country and the already large and prospectively increasing demand for iron to supply the wants of American consumption. The expectations of an increased demand from other countries and of an improvement in the home demand had not then been realized, and the danger seemed to be that, in the absence of any other adequate outlet for the surplus of British iron, more would be sent to this market than could be sold except at concessions which would unsettle values and produce the results which always attend an oversupply at a time when confidence is weakened and speculation paralyzed. Since the article to which we have alluded was written, the English market seems to have experienced some rather sharp fluctuations which are not fully explained by the information as to prices sent us by cable, nor by the more tardy mail advices which have thus far come to hand. For the past three weeks our cable dispatches have indicated a most unexpected and alarming depression in the British markets. From what our well informed English correspondent says in his letter published in another column, we judge that the reason for this is found in the fact that there is a general lack of confidence in the conditions favoring improvement, from which so much was expected a few weeks ago, although there would seem to be abundant statistical warrant for a more hopeful feeling than appears to exist at this time. It may also be questioned whether the real condition of trade can fairly be judged from the happenings in the open market. Notwithstanding the evident demoralization of prices which our recent cable advices have shown, there are evidences of an increased demand which seem to warrant the prediction of a decided improvement in the British iron market. While the present and prospective American demand is still regarded as the most important outlet, it is not the only dependence. Reports from the principal iron-making districts of Great Britain are to the effect that the works are supplied with orders which will keep them busy for some months to come. Besides the prospect of continued orders on American account, there are better reports from Australia and New Zealand, and a marked increase, up to latest mail advices, in the business doing with the Cape and other South African countries. There is also a better outlook for Continental trade. English iron is more in demand in Germany; and the fact that in France and Belgium the iron and steel works are full of orders and prices are steadily advancing, seems to indicate that supplies from the British market will be needed.

These facts may be considered as favoring the hope that prices in Great Britain will soon experience a sustained advance; but before this can be brought about we may expect to witness fluctuations which will occasion more or less uneasiness in this country. There can be no question that the Continental demand is better than was expected. The reports from France are more satisfactory from week to week. Germany is busy, and as an illustration of the condition of trade in that country, it may be mentioned that on the 16th ult. Westphalia wire was £2 higher than English wire, with the prospect of further advances. Belgian manufacturers are full of work, and have advanced their prices to a figure which must necessarily divert orders to England, where they can be filled more cheaply and promptly. Such a diversion has already been witnessed to some extent. Like favorable conditions are found in Luxembourg and Austria. In fact, British manufacturers are now relieved from all anxiety on the score of active foreign competition, their competitors having their hands full, with good prospects ahead. From countries not themselves large producers, the reports are encouraging and the orders increasing. A well-informed correspondent writes us on this point as follows:

"Eastern Europe is buying more largely, "and both Italy and Spain show symptoms of "returning vitality. South Africa is rapidly "assuming the position of one of our best "colonial buyers. Orders thence are just "now of good proportions. India is taking "much railway material and sundries. "From the Australian colonies and New "Zealand indents are of large size, and the "improved values of their raw products will "certainly give an impetus to their purchases of our manufactured goods. From "Brazil, the Argentine Republic, &c., advices speak more hopefully; indeed, on all "sides there are cheering tokens, which "support the opinion that trade is universally looking up, and favor the idea that "we are certain to have an excellent year's "business." Looking to the Board of Trade returns for January, the latest at hand, we find that these hopeful views are not without some statistical basis. Of the two and three-quarter millions increase in British exports as compared with January, 1879, upward of one million is credited to iron and steel. In the demand for some classes of iron goods British India ranks first; in sheets, hoops and boiler plates Australia receives double the quantity sent to this country; and as regards cast and wrought goods, the United States stand sixth in the list. Although India, Australia and Brazil follow us closely, the exports of hardware and cutlery to the United States are the largest. But except in our demands for iron, this country is not Great Britain's best customer. The total of our several imports from Great Britain bears but a trifling proportion to the whole, and (pig iron and old iron for remanufacture excluded) fall considerably short of those of British India, and are only fractionally above the exports to France and Germany. Even Spain and Russia are prominent in the January returns, and both show a great improvement in their demands for British machinery. The bulk of the increase, in short, must be credited to Australia, British India and to Continental countries. In the order named, India, Australia, Spain, France and Russia are England's principal customers for steam engines; and Russia, Germany, France and India for other descriptions of machinery, with America and Spain about equal in their demands. This is certainly better than was expected, and will be regarded with no little satisfaction by many classes of our readers.

From all the facts before us, the prospect of increased firmness in the English markets appears better than it did a month ago; and there is less reason for uneasiness at the disproportionate prominence given to the American demand in enumerating the elements of present and prospective strength. That the British iron trade is not yet "out of the woods," however, is shown by the tenor of our recent cable advices. Perhaps we cannot expect much change for the better until settled weather shall permit a resumption of navigation in waters which in winter are dangerous or practically closed. The next three or four weeks may confirm the hopes of improvement which now seem so abundantly warranted, or the present uncertainty may be still further prolonged; but notwithstanding the utterly unsatisfactory and disappointing character of current telegraphic advices, we believe a survey of the whole field will lead to the conclusion that the British iron trades must soon feel the effects of the general improvement, and that the amount of iron sent to this country will not be so great as to break the market. It is an unpleasant but obvious fact that our markets are now controlled in great degree by foreign iron, and many well-informed dealers and consumers are convinced that, unless the prices of foreign pig irons are advanced from some cause, it will be impossible to sustain the prices of native irons. If our hopeful view of the outlook abroad is warranted by the course of events during the next two months, the prices of foreign irons may advance to something nearer the level of domestic quotations. More than this is probably not desirable. Iron at the highest price at which it can be sustained is not favorable to general prosperity. What is more to be desired is stability in prices at a point which will yield fair profit to makers, without unduly encouraging speculation or perceptibly checking consumption. This, in view of the outlook abroad, we shall probably have; but those who are still inclined to speculation for a further advance would do well to study foreign advices very carefully, as they unmistakably furnish the key to the situation.

The Panama Canal.

M. de Lesseps, to whose energy and skill the completion of the Suez Canal is due, has appeared in this country as the promoter of an enterprise which, if carried through, would very considerably affect our commerce and that of the world. The proceedings of the eminent French engineer and financier and of his friends have been followed with close and critical attention by the people of the United States. Aside from political considerations, involving delicate questions as to the expediency of allowing European capitalists to control a highway of national importance, there was much in the manner in which the enterprise was promoted to arouse suspicion in this country. A so-called International Congress, composed largely of men without qualifications fitting them to sit in judgment on important rival schemes, rushed through an enormous amount of work without due deliberation or debate, and after a few sittings came to the conclusion that it ought to indorse M. de Lesseps' plans, probably because, in view of earlier successes, he was looked upon as being best able to decide, notwithstanding the fact that all his information had been gathered from the reports of others. It is not our object to discuss from an engineering point of view the merits of the different inter-oceanic canal routes proposed, because the matter has been, in a somewhat blundering manner, pushed beyond that phase. M. de Lesseps has gone and seen, and now he proposes to conquer. He has issued an invitation to the capitalists of the United States to participate in the enterprise, and generously holds out to them the prospect of securing one-half of the share capital required, which proportion he has reserved for the moneyed men of America. After the failure to arouse much interest in a similar attempt some time since, this magnificent offer sounds very much like the kind advice which showmen are in the habit of giving to their patrons by urging them to secure seats early to avoid vexatious disappointment. M. de Lesseps' high standing entitles him to a respectful hearing, but no American business man, when about to invest in an enterprise of importance, can be expected to part with his money because he is dazzled by the prestige of a great name. He will look for facts and figures, and for these he is referred to the report of the Technical Commission, just submitted. According to this report the estimated cost of the canal from the Bay of Limon to that of Panama will be 843,000,000 francs, or $168,000,000, including a great dam at Gamboa, a tide lock on the Pacific side and a breakwater on the Atlantic side. This figure, it is expected, will in reality not be reached, and M. de Lesseps has, therefore, concluded to content himself with a share capital of 600,000,000 francs, or $120,000,000. As it is avowedly the intention of the promoter of the enterprise to pay interest on the share capital during the time of construction, and there are no doubt heavy expenses connected with the floating of the enterprise, it is impossible for outsiders to see how largely this share capital will have to be supplemented by the issue of bonds. While much uncertainty exists on this score, there is considerable apprehension that the basis of the estimates of income are inaccurate and overdrawn. The figures were compiled by M. Lavasseur for the Congress, and although the writer distinctly states at the outstart that a subject which for proper treatment would have required months of hard labor had to be dealt with in a few days, his jumble of figures and assumptions is presented as the basis upon which the financial prospects of a great enterprise rest. He adopts a peculiar method of getting at the tonnage by dividing the trade of the various countries with one another, expressed in coin by the estimated value of one ton of cargo. He claims for the canal the total commerce of the United States with Oriental Asia and Australia, one-half of its trade with the Indian Ocean, the commerce of Polynesia and of the States on the Pacific coast of America with the countries of North America and Europe, the trade between the Atlantic and the Pacific coasts of the United States, and, finally, one-half of the trade of Europe with Eastern Asia and Oceanica. M. Lavasseur estimates the total tonnage of trade of the United States affected by the canal at 3,443,000 tons, from which is deducted for local shipping, &c., enough to leave a total of 2,000,000 tons—a large exaggeration, if there is any value in the figures given by Admiral Ammen, who states that in 1877-78, the movement between United States ports on both oceans with one another, and with foreign ports, is about 975,000 tons. The data given by the latter authority seem much more probable, if it is considered that the tonnage of the Pacific Mail Steamship Company between New York and Aspinwall is only 320,000 tons. M. Lavasseur cannot claim that the trade passing around Cape Horn, if entirely diverted to the canal, and the quantities of through freight now going from Eastern seaports to San Francisco, would foot up to 2,000,000 tons, a figure which is strikingly preposterous when he places the trade between England and the Pacific coast at only 1,050,000 tons. Adding thereto 356,000 tons for France and 356,000 tons for other European countries, he reaches a total of 3,762,000 tons. Making allowances for inaccuracies, the total is placed at 3,500,000 tons. To this he adds 1,330,000 tons, obtained by taking one-half of the trade between Europe and Oriental Asia and Oceanica. He seems to have had some misgivings on this point, and appears to have ignored that, owing to a disparity of distances, all in favor of the Suez Canal and the Cape of Good Hope routes, there is very little probability of any important portion of this trade taking the Panama route. By allowing for an expansion of trade during the years of the construction of the canal, M. Lavasseur rolls up this total of 4,830,000 tons to more than 7,000,000 tons; but here, again, prudence steps in and bids him stop at 6,000,000 tons.

The few indications given in the above may serve to show the peculiar methods by which the revenues of the Panama Canal are computed, the transit duty having been fixed at 15 francs, or about $3, per ton.

We have noted in the above that the French promoters of the scheme have an exaggerated idea of the benefits which American commerce is to derive from the completion of a canal connecting the two oceans. We need hardly add that their expectations, if they really have any, of finding a market in this country for their shares, are doomed to disappointment. This country possesses so large and so profitable a field for enterprising capitalists, that there will be little disposition on the part of the moneyed men of the United States to embark in enterprises managed abroad, even if the representations of the promoters would stand close and critical examination. That M. de Lesseps' friends should have deemed it sufficient to present their estimates in a very crude and unsatisfactory state, destroys even the last faint chance of aid which they may have had. M. de Lesseps should not misunderstand the cordial and hospitable reception accorded to him during his stay among us. It was due him, and was meant solely for the great man who carried through the Suez Canal, not to the promoter of the Panama scheme.

The Outlook in the Western Iron Market.

There have been so many conflicting rumors regarding the present condition and probable immediate future of the Western iron market, that no little uncertainty exists on these points in the minds of the trade. Some of these rumors we have already noticed. A review of the present situation, the result of careful inquiries in circles that should know the facts, may not be without some value.

It is conceded that orders and inquiries are not so frequent nor so pressing as they were, say, two months ago. Reasoning from this, it is at once assumed by those who take counsel either of their wishes or their fears, that the "boom is at an end," and if they are buyers they try to profit thereby. But it does not by any means follow that this comparative falling off in orders is the result of any weakening in the market. There may be other causes—and in this case there are reasons outside of any weakness—to account for the fact that orders are not so pressing as they were.

In the first place, it is well to remember that at this season of the year—say February and March—there is generally a decided lull in the Western iron trade. This is due to several causes, chiefly connected with the season. The main cause, however, is the state of the roads and the impossibility of getting goods any distance into the country. This year the roads and weather are especially bad, and this fact alone would fully account for the falling off in inquiries and demand. Two weeks of good weather, and consequent improvement in the condition of country roads, would entirely change the market and give it a buoyancy that would be the greatest contrast with its present condition. Indeed the past week has shown a marked change, and careful inquiry by our representative at Pittsburgh among the iron manufacturers develops a decided improvement in inquiries and orders. It has also shown that while the demands of consumers are not so pressing nor so frequent as they were two months ago, as compared with other years they are very large and imperative, so much so as to occasion surprise. In other words, considering the season of the year, instead of there being any falling off in orders, there is a marked and decided improvement, and the outlook gives every encouragement for the immediate future. It is the opinion of the best informed and the most conservative of Western iron masters that the next four months will see the largest business in iron that the West has ever known. They do not share in the fear that some express, that the advance will in any important degree check improvements already contemplated. Regarding railroads, they point out that although the cost of construction has advanced 50 per cent. the past year, or in other words, that a railroad which would cost $8000 a mile last year to build cannot be built this year under, say, $12,000, the $12,000 can be obtained this year easier than the $8000 could have been raised last year.

We have already pointed out the effect of the announcement of the organization in the Mahoning and Shenango Valleys of what was erroneously believed to be an association hostile to the Western Iron Association. Those who assumed that such hostility would result in depressing iron are getting tired of waiting for the depression, and are making inquiries for iron. The passing away of this feeling will give a better tone to the market.

Another fact which will have a decided effect on the price of bar iron, is the rapid working up of the pig iron bought at low prices. Most Western mills have had considerable stocks of $16 to $30 pig iron. This is disappearing. They have been working ore as fix that cost $7 to $8 at Cleveland. When pig iron has to be bought at $40 it will cause a different feeling as to the price of bars. When ore is received at furnaces and mills that costs $12.50 at Cleveland, there will be no feeling of weakness on 4-cent iron.

The Pittsburgh Chamber of Commerce has a parting shot at M. Leon Chotteau as he leaves our shores, and, worst of all, it discharges a broadside from the *Nation* at him. The gist of the report is as follows:

The New York *Nation*, an organ well known for its anti-tariff views, published as late as the 12th of February of the present year an article on the proposed treaty, and did not hesitate to say that, so far as this country was concerned, the scheme was a delusion and a snare, that France would have all the benefit, as such articles as cotton, breadstuffs, meats, lards and other produce which we now export largely to France, are under her present general tariff either free or subject to the same duties as under her conventional tariff. To show that after all the plan is simply a little game of heads the French manufacturer wins and tails the American loses, we need only add that there is to be no change proposed in the French tariff by which we can possibly be the gainers, as was clearly shown in the proceedings of the Chamber of Commerce of Angoulerne, whose Committee on Iron and Steel reported as follows: "In the "presence of the development and of the progress "of this industry in the United States, our local "industry is of the opinion that there is rather "occasion for thinking of self protection against "the introduction of American ironwork."

It was to be expected that the iron trades of this country would oppose the treaty, but to quote the *Nation* as an argument against

it was an unkind cut. The ground of the opposition to the treaty is summed up in the following resolution:

Resolved, That in our opinion, even if the terms of said proposed treaty were calculated to benefit American manufacturers, which they are not, such a treaty would be impracticable for the reason that it would disturb our commercial relations with other countries and violate agreements now existing between the United States and many European and other countries "which forbid any "commercial favor to be granted by either party "to other States that shall not immediately be- "come common to the other party."

The Braggart Policy in Strikes.

After five weeks of idleness, the strike in the railroad pits of the bituminous coal mines of Western Pennsylvania ended in the complete defeat of the miners, and work was resumed at the price offered by the operators—3½ cents per bushel. The history of th's strike and its outcome illustrates anew how absurd and unnecessary such strikes usually are. We say usually, for we do not hesitate to declare that the time may come in labor differences when a strike or lockout becomes a necessity. In this case, had a little reason and common sense been used, the distress and suffering, the injury to industry and the bitterness of defeat might have been avoided.

This strike was in that portion of the coal regions of Western Pennsylvania in which the attempt to settle differences by arbitration failed, for the same reason that caused the failure of the Arbitration Board—the absurdity of the demands of the miners regarding the basis of the sliding scale. The basis demanded was the price of boiling iron at Pittsburgh. The scale demanded at the time of the strike, when iron was 3½ cents per pound, would have made digging coal at that time 4¼ cents per bushel. Shortly after the strike commenced the card on iron advanced to 4 cents, and at this price digging would have been 5¼ cents, a most absurd price, and one which the miners themselves recognized as such by immediately withdrawing the scale and offering to go to work at 3 6-10 cents—1-10 cent per bushel advance on the offer of the operators. This offer not having been accepted in a stated time, the demand was advanced to 4 cents, and remained at this point up to the time when the miners voted to resume at 3½ cents.

The whole conduct of this strike on the part of the miners has seemed more like a game of bluff than the results of the deliberation of sensible men, conscious of the magnitude of the interests involved and the results dependent upon their acts, not only to themselves, but to the coal industry and the industries connected with it. They have also acted as though all wisdom was with them, and that they could hide their motives from men as able and as shrewd as themselves. At the very outset they boasted of the "solid" financial condition of the strikers. At the end they confessed "there "was only $27 in the general relief fund "when the strike commenced. For every "hundred dollars that came in, there were "a thousand persons hungry for their "share."

They began with a demand for 4¼ cents and a braggart scale, and when under their scale the price would have gone to 5¼ cents, instead of sticking to it, like braggarts they did not even stick to their first demand, but lowered it to 3 6-10 cents, with the evident intent of inducing some weak operator to accept it and then boast of their victory. At the end, instead of saying nothing as to the cause of defeat, the "bluff" spirit was still predominant, and the failure was ascribed to the refusal of the river miners to unite with them, forgetting that the river miners' refusal was because they were satisfied to work at 3½ cents, and thus this very claim was an acknowledgment that their own fellows believed their demand unreasonable. As a local paper phrases it: "If "this is a sample of their policy in organiz- "ing and conducting a strike, then such "policy was utterly devoid of honesty, the "best of all policies."

Railway Extension in India.

With the exception of the United States, and possibly France, no country of the world appears to be so actively engaged in the extension of its railway system as India. It has long been understood by those at the head of Indian affairs, that the stability of English dominion and the development of the resources of the Indian Empire are dependent upon a rapid extension of railways. Their great value during recent complications in Afghanistan has shown this, and the increased exportation from India of bulky staples, like cotton and cereals, has clearly shown that commerce and agriculture also have been largely benefited. The interests of India, whether at war or at peace, demand increased railway facilities, and it is to India that English manufacturers look for a considerable market. Little is known in this country about the recent work done in India in this direction, and it may be of interest to place before the readers of *The Iron Age* some facts drawn from a government report by Juland Danvers, for a copy of which we are indebted to Messrs. Matheson & Grant, engineers, London. On the 1st of January, 1878, India possessed 7220 miles of road, to which during the year were added 995 miles, built almost exclusively by the state. On the 1st of January, 1879, 1021 miles were either sanctioned or in course of construction, and it is more than probable that an equal mileage will be added during the coming year. The annual consumption of rails in that country for new lines will therefore not, in all probability, fall short of 100,000 tons, the greater bulk of which would be steel. In January of the present year more than 13,000 tons were shipped from England, which, if this rate were kept up, would indicate a considerably larger demand. Small as this may seem when compared with the requirements of this market, it is quite an important item for English makers; and as it represents the whole of a demand the proportions of which have been unduly magnified by those interested, it deserves notice.

Never in the history of the iron trade of Pennsylvania has there been such activity in prospecting for iron ore as at the present time, and never have there been so many discoveries nor so many old mines reopened as during the past year. The high price now asked for this season's delivery of ores from other localities, whose excellence has led to their nearly exclusive use in many parts of the State for some years past, has stimulated this search. The native ores can be used in the furnaces in connection with these high-priced ores, and will make a good iron and one that will be much cheaper in cost. There promises, however, to be a demand for all the good ores that can be mined and put into the market.

The series of conferences at Pittsburgh between the manufacturers and the committees representing the Amalgamated Iron Association are at an end for the present, and have resulted in the workmen getting virtually what they demanded. At 4-cent card, their original demand for rolling No. 24 sheet iron was $11.30 per ton; the price agreed upon was $11.00. For muck rolling they demanded 92 cents; the price fixed was 90⅝ cents. For scrapping piles they demanded $2.85 and got $2.60. The changes in the other scales adopted below the demand of the iron workers were about in the same ratio as this.

NEW PUBLICATIONS.

THE COMSTOCK LODE. ITS FORMATION AND HISTORY. By John A. Church, E. M., Ph. D. Published by John Wiley & Sons, New York. Price, $7.50.

From time immemorial it has been the effort of every miner to combine from observed facts some theory as to the origin of the deposit he is working, the latter being then used as a guide in further explorations. Although the elaboration of such theories has always, it appears, had a special charm for those working metalliferous deposits, very little truly scientific work has been done in this direction; and the great practical problem of the formation of mineral deposits and the genesis of their contents, is far from having received the attention which its importance demands. While in all other branches of geology hundreds of earnest specialists are gathering vast stores of facts, the efforts to make a scientific and close study of mineral deposits have not been numerous or satisfactory. One of the most elaborate and valuable monographs on the history and formation of any vein, is that just published by Prof. J. A. Church on the Comstock Lode. Many circumstances combine to make the study of that great lode one of peculiar interest, and one eminently likely to attract the attention of many besides those whose tastes or profession leads them to enter upon such subjects. The varying fortunes of the great mines of the Comstock Lode, the enormous quantities of bullion which some have poured into the hands of their owners and managers, the millions expended in unprofitable search for new bonanzas, the difficulties opposing the advance of the miner, the notorious gambling for which the mines of the lode have acted as a pretense—all these circumstances have created the world-wide fame of the Comstock, and will add to the interest with which a work on the deposit itself is received. In presenting his views of the history and formation of the lode, Prof. Church has naturally been forced to enter into many strictly scientific details, and his book cannot, therefore, in any sense be termed a popular one; so that those who take it up must not alone possess an accurate knowledge of geology, but they must also be well acquainted with the investigations of his predecessors, Baron von Richthofen and Clarence King. To many of our readers a short summary of the facts observed by the author and his conclusions will perhaps be welcome, as throwing light upon the difficulties with which those working our greatest silver deposits must contend, and as showing its nature, its present aspect and its future prospects.

The mean direction of the Comstock lode, though subject to great irregularities, is almost coincident with the line of magnetic north. The numerous mines possessing claims, varying from 3550 to 90 feet in length, have been divided into three groups. Beginning from the northern end, there are the Virginia group, comprising such mines as the Sierra Nevada, Mexican, Ophir, California, Consolidated Virginia, Best & Belcher, Gould & Curry, Savage, Hale & Norcross, Chollar and Potosi: the Gold Hill group, embracing the Yellow Jacket, Kentuck, Crown Point, Belcher and Overman, and the American Flat group, aggregating in all a total length of 22,546 feet. From 1859, when the Comstock lode was accidentally discovered, until the end of 1878, the total amount of ore extracted is estimated at 6,500,000 tons, containing an estimated assay value of $364,000,000, a sum equal very nearly to the par value of the stock of the 29 companies now working on the lode. The total dividends distributed by 13 of them were nearly $117,000,000, while the assessments levied were approximately $38,000,000, leaving a balance of $79,000,000.

The rapid progress of mining, which frequently amounts to a deepening of 150 feet in a year, has carried all the principal mines below the 2000-foot level, and as the deposit, which dips to the east at an angle varying between 30 and 60 degrees, is reached by vertical shafts sunk through the hanging wall, the line of shafts has steadily moved to the eastward, so that those now in progress of construction are from 3000 to 4000 feet from the lode croppings, the latest and deepest being designed to strike the lode at a vertical depth of about 4500 feet. From this it will be readily understood that Prof. Church, though his examination was made but a few years after the investigations of von Richthofen and Clarence King, found a vast area of new ground open for inspection. Those of the German scientist were made in 1865, when the deep workings on the lode were about 500 feet below the surface, while at the time of King's reports (1870) the mines had at some points reached 1100 feet. Mr. Church's observations have been gathered almost exclusively within the mines down to the 2000-foot level, little close study having been devoted to the surface, because the former method yields more trustworthy information. Baron von Richthofen had already shown, in the course of his investigations, that the Comstock lode lies in rocks of late tertiary age, comprising diorite, propylite, andesite and trachyte, all rocks of volcanic origin, poured out in the order named. The history of the lode is so closely dependent upon that of these rocks, that it will be of interest to briefly note the characteristic features indicating their origin. Prof. Church holds that the diorite underlies, in a broad, massive sheet, the whole of the lode, and that it, as well as the propylite, has not come to the surface in consequence of one or a few overflows, but that numerous successive eruptions caused the formation of a thick series of stratified rocks of volcanic origin, which were tilted afterward, so that they now stand at angles varying from 35 to 60 degrees. The dynamic movement took place, and was probably completed, before the eruptions of andesite occurred. A striking proof of the fact that periods of activity were followed by long inaction, is furnished by the circumstance that vegetable remains and fossil wood have been found in the propylite in several localities. During the propylite period, which continued long enough to cause the formation of rock between 11,000 and 12,000 feet thick, the movements of the ground went on, their action being twofold. They caused, notably, a strong fold and a series of parallel smaller undulations having a north and south course, and causing fluctuations in the dip, while a system of subordinate folds, running east and west, created changes in the strike of the lode and the country rocks. The intersections of the cross waves would mold each layer of the propylite and diorite into a checkered and irregular system of low domes and shallow troughs. A period of strong erosion followed, and this was succeeded by the appearance of a new volcanic rock, the andesite, which, according to all appearances, rose through many fissures between the layers of diorite and propylite, and was accompanied by vertical movements, causing the sliding of some portions of the fissure walls. Powerful decomposing and eroding forces carried away the greater bulk of the materials of this andesite overflow, so that the present exposures of that rock are comparatively small. The great mass of andesite overlying the older series had, however, the effect of modifying, by its weight, the effect of the dynamic movements still going on, and narrow partings opened between the strata, which afterward served as the highway of the waters, to which the formation of what is called the lode is due. These hot waters, charged with silica, rose through the small crevices opened during the andisitic period, and acting upon the rocks, decomposed them. It should be distinctly stated that the large bodies of so called "quartz" found in the Comstock lode are by no means pure silica; they are not homogeneous, but generally composite structures of propylite and quartz in parallel layers. Everything points to the conclusion that they were not formed by deposition, but by substitution; they are not the result of a gradual filling of large and wide crevices with silica, but of a process of kaolinization, the products of which are clay, which is found in large, irregular and non-continuous masses in the Comstock lode. Nor can the fact that on the surface the propylite is much more affected than the andesite, appear surprising when it is considered that the conditions are widely different. Based upon the observation that quartz bodies in the district are almost always accompanied by andesite dykes, Prof. Church holds that probably the main channel of the hot siliceous waters was a mass of propylite, fissured and baked by the heat of the adjacent dyke. This period of rock substitution by siliceous waters gives the origin of that great portion of the lode and lode quartz which is barren, the changes from ore bearing to poor ground being too sudden and too great to admit of their being the result of simultaneous action. The first period of sulfataric substitution was naturally accompanied by extensive erosion, the andesite on the surface being converted by kaolinization into clays, which were easily carried off by the waters. The next phase in the history of the Comstock lode was that due to eruptions of trachyte, the main source of which was, however, removed somewhat further to the east. The mass of rock poured out is again assumed by Prof. Church to have been enormous, and to have wrought important changes by its weight. From an examination of the position of the bonanzas of the Comstock lode, it appears that they occupy its highly inclined portions, and therefore it is concluded that, after the first period of rock substitution and quartz formation, the strata were reopened by some force, affecting only the steeper portions, and that it was at this time that the argentiferous and auriferous portions of the lode were deposited. It is to the trachyte, its enormous weight resting on the hanging wall, that Prof. Church assigns the work of creating this second system of channels. The instances of the influence of the dip of the strata, if we may so term them, upon the richness of the lode are numerous and striking, and there is much that commends his view that the argentiferous portions are due to a second period of siliceous substitution, accompanied by metallic impregnation contemporaneous with or succeeding the trachytic eruptions. There is also one noticeable difference of the quartz in the rich and barren portions, which is looked upon as indicating that both were derived from sources distinct from one another. The rich quartz is largely composed of material which may be easily crushed between the fingers, and the grains of which are never crystalline. In the upper regions this "sugar quartz" appears to have been cemented by resolution and redeposition of silica. The main channel of the siliceous waters of this second metalliferous trachytic period is supposed, in the absence of any other continuous opening, to have been the same layer of rock near the black dyke which served as the highway of those of the first period.

Such are the main features of the history of the Comstock lode. We need not add that the sketchy outlines here presented are carefully elaborated by Prof. Church, who has fortified his position in regard to his interpretation of the facts in a thorough, conscientious and able manner. In the chapters following he reviews the more prominent mines in the light of this theory, and then proceeds to draw the conclusions to which, if followed out, his view of the history of the lode would point. The Comstock lode is not a fissure vein, it is the result of substitution of volcanic rocks by sulfataric action. Its history indicates that the search for bodies of ore must be prosecuted in two directions, eastward across the strata and downward in the dip. The black dyke, which appears to have played an important part in the formation of the lode, must serve as a guide in both vertical and horizontal exploration. As long as the dip is flat, little need be expected, but where the strata commences to take a rapid downward course, the chances for an improvement in the vein become promising. The second important fact is that the thickest parts of the quartz lie on the edge of the hollows of the west wall, and it is necessary to obtain the earliest indications of such changes. Prof. Church thinks, in view of the great power of the dynamic movements, that there can be little doubt that the productiveness of the lode will continue to depths beyond the limits of profitable extraction. He thinks that, although the parallel quartz bodies of the Comstock have not proved rich near the surface, there is no sufficient reason to state positively that they are poor throughout, especially when it is taken into consideration through what great barren zones the mines in the mother lode had to pass, until they reached what appears to be the second rich zone. In the second thousand feet of the mines on the lode there has been a flattening of the dip, accompanied by a cessation of ore deposition, and as soon as the crest is passed there is promise of reaching, in the succeeding steep portion, a zone which may contain bonanzas. Prof. Church then enters into some general considerations and takes up the Justice lode. This is followed by a chapter on the heat phenomena of the Comstock lode, a subject to which we have already referred in connection with a paper read by the author before the American Institute of Mining Engineers.

We trust that from the foregoing our readers will have obtained an idea of the aims of Prof. Church's work. We need only add that in style and in arrangement of matter it is admirable, and that the publishers, have, by faultless execution and a number of well-printed plates, contributed largely to making a valuable and unique publication.

REPORT OF THE COMMITTEE OF THE SOCIETY OF TELEGRAPH ENGINEERS ON THE BIRMINGHAM WIRE GAUGE. Published by E. & F. N. Spon, London and New York.

As a body largely interested in all questions affecting the sale of wire of different kinds and grades, the Society of Telegraph Engineers of Great Britain appear to have determined to enter their protest against the present diversity of gauges, and express their wishes in regard to the standard which they desire to see become general. A committee was duly appointed, and the choice made is certainly well calculated to add weight to its recommendations, engineers of such renown as Siemens, Pierce, Abel Willoughby Smith, Prof. Abel and others taking part in its deliberations. Their report on the Birmingham wire gauge is now before us. In arriving at the conclusions embodied in this document, the committee was naturally guided largely by considerations affecting all consumers and manufacturers of wire; but they have taken into account also some matters which are important to telegraph engineers alone. To those using wire for telegraphic purposes, it is a matter of much convenience if they can, knowing the weight or conductivity of one size, readily calculate that of the others. It is not distinctly stated how much this consideration may have influenced the committee, but it naturally has done so to some extent. The main principles which have led to the decision reached, are worthy of the careful attention of those interested in this country, and we may be permitted to point them out briefly.

The various gauges now in use under the name of the Birmingham Wire Gauge, have been based on long practice and experience. They are well adapted to the requirements of the trade, and should not, therefore, be widely departed from. Besides being arbitrary and irregular, they have the disadvantage of being referred to English measures, so that their universal adoption would be a matter of difficulty. Besides, being graded by full thousands of an inch, they do not admit of the establishment of the finest sizes. Gauges formed by uniform decrements of weight from size to size have the merit of having no special relations to English measures, and can be extended indefinitely in either direction for larger and smaller sizes. These considerations have, after a due examination of English and American gauges, induced the committee to adopt Clark's system. Clark makes the No. 0 size equal to one centimeter in diameter, and then arranges each succeeding size so that it is exactly 20 per cent. less in weight than the preceding one. It is to be regretted that the committee do not in any portion of their report state what the weight of a unit of length of No. 0 Clark W. G. actually is. This new gauge—new because it has found little application until now, though proposed by Mr. Latimer Clark in 1867—is to be called the British Standard Gauge. Its chief merit is an approximate conformity with the numberless existing Birmingham gauges, and if it succeeds in supplanting them much will be gained. We are inclined to doubt, however, whether its claims to recognition as an international standard will be widely accepted.

The report, which deserves careful perusal, is accompanied by a number of tables by an interesting letter from Mr. Thomas G. Rylands, of Warrington, the originator of the Warrington gauge, and by two papers read by C. V. Walker, on the unit of the B. wire gauge, and by Latimer Clark, on the wire gauge, before the Society of Telegraph Engineers and the British Association, respectively.

The Hoop Iron Controversy.—Duty on Damaged Russia Sheets.

(From our Special Correspondent.)

WASHINGTON, D. C., March 10, 1880.

The opinion of the Attorney General and the accompanying papers, in answer to the letter of the Secretary on the hoop iron question, were submitted to the Cabinet yesterday, and were the subject of formal consideration with a view to directing what action should be taken by the Secretary in a question of such great importance. The opinion of the Attorney General went over the ground of former judicial action and the rulings of the Department at considerable length, and, being in a somewhat argumentative form, it was difficult to take any decided position on either side, as regards the direct question as to which classification of duty hoop iron cut into lengths should come under. It stated, however, that the Secretary of the Treasury would have perfect authority to reverse the present ruling of the department, though based upon the decision in the United States courts. As the duty collected on this class of iron in 1868 was specific, the Secretary in 1878 ruled (based on the courts in cases decided against the government in the matter of collecting specific duties) that Custom House officers should thereafter collect duties on hoop iron cut into lengths at 35 per cent. ad valorem. The opinion of the Attorney-General was that the Secretary of the Treasury has ample authority to set this last decision aside and instruct customs officers to collect the former specific duty, as provided for in the statutes. The Secretary of the Treasury, in conversation, indicates an evident unwillingness to assume the responsibility of acting upon this opinion of the Attorney-General, and is now seriously considering the propriety of referring the whole question to Congress. Before taking this step he will hold a conference with the law officers of his department. The representatives of the manufacturers are evidently not at all anxious that this question should be made the subject of Congressional action, as it would be likely to involve other questions and lead to such serious agitation of the duty on the various classes of iron as would tend to prejudice their interests.

A question is now pending as to the rebate of duties on Russia iron damaged by salt water and other causes incident to the exposure of a sea voyage. It is charged that importers purposely apparently damage the iron, which is subjected to treatment in the United States and is sold in the market for perfect Russia, thus evading full duty. The following letter to the Collector of the Port of Boston will explain the position of the department on the subject:

TREASURY DEPARTMENT,
WASHINGTON, D. C., February 26, 1880.

Collector of Customs, Boston, Mass.—SIR: Referring to department's letter of the 7th ult., in which you were instructed in regard to allowance for damage for rust on polished Russia sheet iron, I have to state that the report therein referred to as having been requested from the Collector of Customs at the Port of New York, has been received, and that the practice at that port appears to be substantially in accordance with the instructions contained in the department's letter above cited.

In the report of Special Agent Bingham, of which a copy was forwarded to you, it is stated that the "stereotyped cause so often assigned for damage—namely, heat in the hold of the vessel—would not be a valid one as relates to packages of sheet iron, for the reason that rust and stains such as would constitute a proper damage to be considered, must arise from actual contact with salt water; and if the outer sheets are in sound condition, it would follow that damaged sheets found in the interior of the package were either so damaged when packed or were packed in a moist condition."

The department is informed that such iron is often in a "chilled" condition when it is placed in the warm hold of the vessel, and that moisture is precipitated thereon and rust caused. It is believed that the fact of sound shipment and measure of damage can best be determined by the experts who see and handle all the damaged merchandise.

The examination should be made by the appraising officer while the packages are in their original condition, and such iron should remain unpacked and undisturbed in the original packages in which it was imported, until the proper examining officer has carefully inspected the damaged portion sheet by sheet. If merchants desire to obtain a knowledge of the condition of the importation of such iron before its examination by the customs officers, the appraiser may authorize the removal by them of one of the three iron bands of the package, so that the ends of the sheets can be pried apart and their appearance observed. Very respectfully,

H. F. FRENCH,
Assistant Secretary.

Commercial Law—Value of Warehouse Receipts.—The case of the First National Bank against H. M. Bates, on trial in the United States Court at Cincinnati, was ended with a verdict for the plaintiff for the full amount claimed. The point in the case of public interest was the legal value of warehouse receipts. The bank had loaned $8000 to one Grant, provision broker, and had taken as security a warehouse receipt of Bates for lard, containing a provision that the lard was to be delivered on presentation of the receipt. Grant failed, and when the Bank called on Bates for the lard it was found that it had been delivered upon the order of Grant. The verdict was rendered for the plaintiff under the instruction from the Court that the warehouseman was bound to observe the conditon of the receipt. Suits are pending upon similar receipts, amounting in the aggregate to 27,000.

Special Notices.

BISSELL & WELLES,

AUCTIONEERS.

Large Trade Sale of

Hardware, Cutlery,

Housefurnishing Goods,

Builders' Hardware, &c.

ON

Wednesday, Thursday and Friday,

MARCH 24, 25 and 26.

AT

83 CHAMBERS and 65 READE STREETS.

Wednesday's sale will comprise a large line of Builders' Hardware, Sheif Hardware, Edge Tools, &c., &c.

Thursday's sale will comprise a large line of Housefurnishing Goods, Shelf Hardware, Tin and Enameled Ware.

Friday's sale will consist of a large line of Pocket Cutlery, S. P. Forks and Spoons. Also,

Second Spring Sale,

By order of the *Cutlery Association,* of about 12,000 dozen Table Knives and Forks, Carvers, Butcher Knives, &c., Seconds.

Full particulars will be given in next week's issue of *The Iron Age.*

IMPORTANT NOTICE TO

MANUFACTURERS OF HARDWARE.

FOR SALE OR LEASE.

The extensive water-power and manufacturing property formerly owned by the Bricksburg Manufacturing Company, situated in the village of Bricksburg, N. J., 55 miles from Philadelphia and 57 from New York, on the New Jersey Southern Railroad. Direct communication between the two cities. The buildings on the ground consist of a fine factory building, 50 x 150 feet, two stories and attic. Main shafting on the first and second floors. Also, a foundry building attached, 60 x 60 feet. These buildings are of brick, with slate roofs, and all in good order and ready for immediate occupancy. They are supplied with water by a 60-inch Dayton wheel. The dam has recently been put in complete order, affording a plentiful supply of water throughout the year. A railroad track, with turn-table, runs into the factory grounds. This property is now offered for sale or lease by the owners. Address

A. M. BRADSHAW, Agent.
Bricksburg, N. J.

FOR SALE.

As a whole, or in parcels, 27,000 acres of Virginia agricultural and mineral lands, on James River, about 30 miles from Lynchburg. The ores are hematite and specular. There is one iron blast furnace on the property. Possession will be delivered to the purchaser without delay. Address the undersigned,

FRANCIS T. ANDERSON.
Court of Appeals, Richmond, Va.

For Sale.

Christiana Rolling Mill Property, situated on the south side of Christiana Creek, Wilmington, Del. Main building, 90 x 130 feet, containing two trains of Rolls 30 x 96 inches, and 26 x 72 inches. Complete in all its appointments for a first-class Plate Mill. Or, will sell an interest to a person having capital, experience and capable of conducting the business. Apply to

LOBDELL CAR WHEEL CO.,
Wilmington, Del.

Wanted.

A competent man, who has a thorough knowledge and practical experience in the heating and rolling of steel ingots, to introduce a valuable improvement. Address, with reference,

E. A. A., Boston, Mass.,
Care of office of *The Iron Age*, 83 Reade St., N. Y.

For Sale.

The best Retail Hardware business in Western New York. Stock $10,000 to $12,000; sales $35,000 in 1879, at a good profit. Will reduce stock to $8000 if desired. For further particulars, address

D, Box 22,
Office of *The Iron Age*, 83 Reade St., N. Y.

FOR SALE.

Stock of General Hardware, Store Building and good Dwelling connected. Situated in a small town, and one of the best grain markets in Ohio. Good opening for an energetic man. For particulars address "C,"

Lock Box 186, Canton, Ohio.

For Sale.

An interest in a well-established Machine Works and Hardware Manufactory, doing a large and increasing business, well situated within 80 miles of New York, with direct communication by water or rail. Capital required, from $5000 to $10,000. For further particulars address, with reference,

S. M. C.,
Office of *The Iron Age*, 83 Reade St., New York.

FOR SALE, CHEAP.

Second-Hand Engine, 12 x 28 Cylinder, 10 feet Fly Wheel, 5 feet Pulley, 16 inches face; can be run right or left hand of bed; Pump, Heater, &c., with engine. Also a 5-horse-power Portable Engine and Boiler (Economizer, built by Porter Mfg. Co., Syracuse, N. Y.); nearly new and in perfect order. For particulars, call on or address

THE RENZ HARDWARE CO.,
Bridgeport, Conn.

AN EXPERIENCED HARDWARE man, fifteen years in one large house in this city. Was bookkeeper, cashier, stock buyer, salesman and one of the managers. Open for any position at a moderate and reasonable salary. First-class city references. Address,

HARDWARE, Station L, New York City.

WANTED—A competent man as Finisher in a Rolling Mill, near New York City, to make Merchant Iron. Address, stating salary expected and where last employed,

IRON,
P. O. Box 2333, New York.

Special Notices.

DON'T BUY

MACHINERY

Of any kind

UNTIL YOU WRITE TO US

for our List No. 20, containing full description, with prices, of over 2000 New and Second-Hand Machines, such as

MACHINE TOOLS,
BLACKSMITH TOOLS,
WOODWORKING MACHINERY,
STATIONARY AND HORIZONTAL ENGINES AND BOILERS,
PORTABLE ENGINES,
HOISTING ENGINES,
CAR MACHINERY,
WATER WHEELS,
COTTON AND WOOLEN MACHINERY,
SAWS,
STEAM PUMPS, &c., &c.

We offer the largest collection ever in the hands of ONE FIRM before, and at

PRICES FAR BELOW THEIR TRUE VALUE.

Enclose stamp and state fully just what Machine or Machines you are in want of. Address

S. C. FORSAITH & CO.,

MACHINISTS,

AND GENERAL MACHINE DEALERS,

MANCHESTER, N. H.

Richmond and Alleghany R. R.

Notice to Bridge Builders.

Sealed Proposals will be received by the undersigned until 12 o'clock m., April 1, for furnishing and erecting four Bridges over James River, on the R. & A. R. R. between Buchanan and Clifton Forge; Buchanan being the Western terminus of the I. R. & K. Canal, and Clifton Forge, a station on the Chesapeake and Ohio Railway, 191 miles from Richmond. There are ten spans, varying in length from 125 to 162 feet. Also for two bridges over smaller streams, of 75 feet span each. All these are through bridges, the masonry being from 25 to 40 feet in hight. Proposals will include strain sheets. The structures will be designed for standard gauge and for a mineral traffic. Plans for both wooden and iron structures will be considered.

These bridges must be in place by July 1, 1880, or false works built by that date strong enough to carry the construction trains.

For further information, apply to Mr. H. D. Whitcomb, Consulting Engineer, Richmond, Va., who will have particulars in a few days.

H. C. PARSONS,
Vice President R. & A. R. R. Co.,
Richmond, Va.

Good Second-Hand Rolling Mill, &c., Machinery.

One pair Bar Rolls and Stand, for making 3 to 6 inch Bars; has five 6-in passes, three 3-in. passes; journals 10 in. diameter, 9 in. long; coupling ends, three escalops 10 in diameter; diameter of finishing pass, top roll 16¾ in., bottom roll 16⅝ in.; weight of both rolls, about 7500 pounds; the two roll stands about 3500 pounds each; price 2¼ cents per pound. One Birmingham, Conn., *Alligator Squeezer,* weight 8 to 10 tons; price 2½ cts. per lb. 47½ feet (in three pieces, 17, 17, 13½,) 6-in. turned wrought Shafting, couplings faced and holes reamed, fitted with or without pillow blocks; price 5 cents per lb. One double Hydraulic Machine, for testing boilers by water pressure; price $65. Three light Punches, for small washers, chain links, &c., no dies; price $75 each. Three Water Pumps, to be used with belt power for filling boilers or tanks; $20 to $50. Address

J. M. LEONARD,
Somerset, Mass.

A Woodruff & Beach Beam Engine,

Low pressure, 42-inch cylinder, 84-inch stroke, with fly-wheel pulley 20 feet diameter, 36-inch face, and

Four Tubular Boilers,

60 inches in diameter, 20 feet long, and all connections practically as good as new.

For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade St.,

NEW YORK.

A. J. STEINMAN, Chairman. W. D. MIDDLETON, Supt.
W. G. MENDINHALL, Sec'y & Treas.

OFFICE OF

PENN IRON COMPANY, Limited,

MANUFACTURERS OF

Merchant Bar Iron, Hammered and Rolled Axles, Car Forgings, Bridge Work, Fish Joints, Bolts, R. R. Spikes, Bolt Ends, &c., &c.,

LANCASTER, PA.

FOR SALE.

One large Planer, 25 ft. long, 5 ft. square, built very heavy, in first class condition. Also, Shafting and Pulleys, and one large Cupola and one large Foundry Crane, all in good condition and for sale cheap. Address

PENN IRON CO., Limited,
Lancaster, Penn.

For Sale.

A Machine to Punch Axe Poles—Cohoes Pattern, with Shop or State Rights.

Address "BOLTON,"

Office of *The Iron Age*, 83 Reade st., New York.

Special Notices.

Reports and Information on all New Inventions and Processes.

Expert Scientific Counsel and testimony in law suits.

Machinery Selected and Tested.

Chemical Analyses and Assays.

Reports on Ice-Making Machines a specialty.

PARK BENJAMIN'S SCIENTIFIC EXPERT OFFICE,

37 Park Row, - NEW YORK CITY.

BUSINESS FOR SALE.

Ohio Butt Co.'s Manufactory of Builders' and Cabinet Hardware.

We will sell our entire business, or we will sell the Machinery, &c., with or without the stock on hand.

The Machinery can be seen in operation at our shops.

Reasons for selling entirely of a personal nature, as the business has *always* been profitable.

Such an opportunity for investment of capital is rarely offered, as we can fully convince any one wishing to investigate.

OHIO BUTT CO.,
Joliet, Illinois.

MENGIS & CO.,

BANKERS

AND

Railway Commission Merchants.

Dealers in all kinds of

Scrap, Wrought and Pig Iron,

Old Rails and Car Wheels.

NEW STEEL AND IRON RAILS A SPECIALTY.

We have established the above house for the purpose of doing a general Railway Commission business. We negotiate the sale of Railroads (or the controlling interests), and effect consolidations and reorganizations.

We also import direct from different European ports all grades of Iron, Pig, Bessemer Steel, Old Rails, &c.

We sell Locomotives, Passenger, Flat and Box Cars at manufacturers' prices.

Any business in our line we respectfully solicit a share of, always endeavoring to promote the interests of our customers. All orders, either by telegraph or mail, promptly attended to.

Mengis & Co.,

43 Pine St.,

NEW YORK.

Post Office Box 154.

Cable address, "MENGIS, New York."

Wanted.

Master Mechanic for Steel Rolling Mill. Must be a first-class Engineer and Roll Turner, and competent to superintend all mill machinery. Steady and industrious. Position permanent, with good pay. Address

MANAGER, Box 68,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

By an established Foundry and Machine Shop, any kind of work in Wrought or Cast Iron. Will undertake to fill orders in the best manner and on reasonable terms. Address

BOX 204,
West Chester, Pa.

For Sale.

A Pick and Mattock Machine to Punch solid or lip Eyes, with Shop or State Rights.

Address "MILTON,"

Office of *The Iron Age*, 83 Reade St., New York.

Sanderson Bros. Steel Co.

A limited number of shares for sale by

EDWARD FRITH & SON,
241 Pearl street, New York.

Special Notices.

A LARGE ASSORTMENT OF

NEW AND SECOND-HAND MACHINERY.

STEAM ENGINE MACHINERY.

One Delamater Sugar-house Engine 26 in. x 48 in.
One Corliss 40 horse power, 10 in. x 24 in.
Five Horizontal Engines, new 9 in. x 16 in.
Four " " 8 in. x 12 in.
One Portable Engine, 5 horse power.
One Hoisting Engine, 12 " "
One Upright Engine, 16 in. x 16 in.
One Horizontal Engine, 16 in. x 30 in.
One " " 14 in. x 36 in. [ferty.
One " " 15½ in. x 30 in., Todd & Raff-
One double Fitchburg Hoisting Engine, g'r'd 7 to 1.
One Upright Engine, 7½ in. x 10 in.
One " and Boiler complete, 5 H. P.
One Boiler, 6 ft. x 15 ft. 58 4½ in. Tubes.
One " 5 ft. x 15 ft. 83 3 in. Tubes.
Two " 5 ft. x 14½ ft. 100 2¾ in. Tubes.

MACHINISTS' TOOLS.

One Lathe, 58 in. x 15 ft. bed.
Two " 32 in. x 20 ft. "
One " 28 in. x 20 ft. "
Two " 17 in. x 6½ ft. "
One " 16 in. x 7 ft. "
One Pattern Makers' Lathe.
One Planer, 42 in. x 16 ft.
One " 26 in. x 6 ft.
One " 24 in. x 5 ft.
One Crank Planer, 18 in. x 2 ft.
One Slotting Machine, 36 in. stroke x 7 ft. wide.
One Travis' Boring Machine.
Eighteen Drilling Machines.
One Root Blower.
One Bogardus Mill, No. 5.
One Pair Hand Shears, Pope's Patent.
One Large Power Punch for bridge work.
One 300 ton Hydraulic Press and Pump.
One Dudgeon Beam Punch.
One Upright Drill, to the center of 64 in.
One " " " " " " 42 in.
Boiler Makers' Tools.
One Hand Punch to the center of 36 in.
One " " smaller.
One " Rolls, 54 in. Top Roll Steel.
One hundred Vices.
Second-Hand Belting.

PUMPS.

One Knowles Special Pump, No. 7.
One Woodward Steam Pump, No. 4.
One Cameron Steam Pump, No. 2.
One Guild & Garrison Steam Pump, No. 3.
One Woodward Steam Pump, No. 1.

J. GRAY'S MACHINERY DEPOT,

37 Dey Street, New York, U. S. A.

IMPORTERS, JOBBERS or MANUFACTURERS,

Wishing a live representative at San Francisco, California, who can give first-class reference, or bonds if required, address

PACIFIC COAST,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

The Machinery complete of the Chicago Plate and Bar Mill Co. A complete mill in every department. Will be sold cheap; easy terms to responsible parties. Address

I. M. AYER,
72 Washington St., Chicago, Ill.

For Sale.

The valuable Iron Ore property of the Wayne County Mining Company, situated in Wayne Co., N. Y., on the line of Lake Shore division of Rome, Watertown & Ogdensburg R. R., with tracks and branches leading to the mines. This property extends over four miles along said road, and nowhere over half a mile from it, and contains over two millions of tons. It is now in full operation and shipping from 100 to 200 tons per day, and is capable of doubling that amount. It is only 17 miles from port of Genessee, one of the best harbors on Lake Ontario, with ample dock room for shipping by lake. For further particulars, address

J. E. ELLIOTT, Sec'y,
Clinton, Oneida Co., N. Y.

For Sale.

23 in. x 48 in. CORLISS ENGINE.

Can be seen running. Will be delivered latter part of this month. Also 18 in. x 42 in. Hewes & Phillips. Can be delivered at once.

E. P. BULLARD,
14 Dey St., New York.

OWING TO FAILING HEALTH, my stock and good-will of an old-established Hardware business, in the flourishing city of Flint, Mich., is for sale. The stock is in splendid condition, and the business desirable for an enterprising individual or firm. The stock is exclusively hardware, and will amount to about $11,000.

H. C. SPENCER,
Flint, Mich.

FOR SALE.

A works completely equipped for the manufacture of Carriage Axles. Is well located in relation to coal and iron, also very accessible to market.

Address E. P. BULLARD,
14 Dey St., New York.

FOR SALE OR LEASE.

The **Right** of the United States of a first-class **Adjustable Chain Pump Bucket,** with self-evident advantages. Can be adjusted to fit the tube, and enlarged in case of wear, hence the pumps can be kept in good working order. Also the entire **Canadian Right** for **sale** or **lease** on royalty. Address,

THOMAS KENYON, Patentee,
Box 103, Hamilton, Ohio, U. S. A.

A Bargain.

I offer for sale at a bargain, my house, storehouse, workshop, and complete stock of general Hardware. Fine opportunity for a live man. Country fine and developing rapidly.

J. S. WHEELER,
Laverne, Minn.

STEAM ENGINE, 16 x 32, FOR SALE.

In good order, and now in operation running all the machinery in the Fort Plain Spring and Axle Works. Can be seen at any time. Sold to make room for a 20 x 42, to be put in April 1.

WOOD, SMITH & CO.,
Fort Plain, N. Y.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.

Address HARDWARE,
Box 366, Salina, Kansas.

Special Notices.

Pipe Mill for Sale or Rent.

The above property is situated at Middletown, Dauphin Co., Pa., nine miles east of Harrisburg, on the Pennsylvania Railroad, with which it is connected by a siding. The building is brick, with a slate roof; size of main building, 108 by 55 feet; engine house, 30 by 36 feet, and a 78-foot stack. A frame pipe shed runs the whole length of building. There are two welding furnaces and one scalp furnace, with room for as many more; a sixty-horse-power engine; eighty-horse-power tubular boiler, and all machinery necessary to run a pipe mill. Machine shop and machinery are on the second story of engine house. Engine, boiler and all machinery are in first class condition, and the entire works are in good repair and could be started at a very small expense. There is also a frame office 12½ by 16 feet about fifty feet from mill, with large Farrel & Herring safe, letter press and office furniture. This property will be sold at a low price, and on the most advantageous terms to purchaser, or will be rented very reasonably. For further particulars apply to

JAMES YOUNG,
Middletown, Dauphin Co., Pa.

E. S. Wheeler & Co.,

54 CLIFF ST.,

NEW YORK,

OFFER

SPECIAL INDUCEMENTS

IN

QUALITY AND PRICE

IN

English and Scotch Foundry

PIG IRON.

FOR SALE.

3 Planers; 5 Engine Lathes; 2 Turret Lathes; Crank Planer; Boring Lathe and Bar; Car Wheel Borer; large Slotter; 7 ft. x 26 ft. Lathe; 3 Milling Machines; Crank Planer; Suspension Drill; 2-ton Chain Blocks; 2 Steam Pumps; Pulsometers; Syphons; Injectors, 5 to 7; Valves, ¼ to 8-inch; Wood-Working Machinery; Horizontal Engines, 6 x 10, 7 x 9, 8 x 12, 10 x 14, 10 x 20, 12 x 24, 24 x 48, 12 x 12; Boilers, all sizes; 5 large Blowers; large Mackenzie Blower. Write for description.

A. G. BROOKS & WINEBRENER,
261 N. Third street, Philadelphia.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working

See page 17 of *The Iron Age* of Oct. 25th, 1877.

TRUSTEES' SALE OF VALUABLE IRON PROPERTY.—TWO NEW CHARCOAL BLAST FURNACES, FORTY-FOUR THOUSAND ACRES OF VALUABLE LAND.—Pursuant to a mortgage executed by James Woods, H. C. Yeatman and James Woods, Jr., registered in the Register's Office of Stewart Co., Tennessee, in book 24, pages 419 to 430, inclusive, the undersigned will sell on the premises, for cash, on the 31st day of March, 1880, that very valuable iron property located in Stewart County, Tennessee, known as Cumberland Iron Works. Parties wishing fuller information will please address the undersigned, care of Third National Bank, Nashville, Tenn.

TEMPLE O. HARRIS, } Trustees.
V. L. KIRKMAN, }

ASTONISHING POWER IN

PUNCHING & SHEARING PRESSES.

See our illustrated advertisement on next to last page of this paper.

PEERLESS PUNCH AND SHEAR CO.,
52 Dey Street, New York City.

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

Great bargains offered to the trade.

A. W. WHEELER,
141 Lake St., Chicago,

For Sale---Window Glass Works.

Situated near a large Western city, in the midst of good coal, with rock, sand and wood close by and cheap. Works has a 6-pot Furnace; 2 Blowing Furnaces, 4 holes each, and 4-stone Flattening Oven, with all needed buildings and appliances. Will be sold cheap. Address

JOS. D. WEEKS,
Office of *The Iron Age*, 77 4th Ave., Pittsburgh, Pa.

WANTED TO BUY, FOR CASH.

One pair of Chilled Rolls, 15 inches in diameter, 32 inches long, with housings, boxes, &c., complete, for cold rolling sheet iron; also six Engine Lathes; three Planers; three Drill Presses; two Bradley Cushioned Hammers. Give lowest cash price, and address

J. F. DUFFY,
care of Mooney & Boland, 162 Broadway, N. Y.

WANTED—A situation as Shingler, Slabbing or Blooming. Have had 18 years' experience. Address

HENRY CROKER,
83 Rebecca St., Allegheny City, Pa.

Trade Report.

Office of THE IRON AGE, }
WEDNESDAY EVENING, March 10, 1880. }

During the past week the financial markets have been active and generally strong. At noon to-day United States Assistant Treasurer Hillhouse opened proposals to sell United States bonds to the government for the sinking fund. The amount advertised for was $1,000,000. The offers were twenty-eight in number, and amounted to $12,670,350. The large proposals were made by the First National Bank, $4,000,000; by Kuhn, Loeb & Co., $1,000,000; by Vermilye & Co., $1,000,000, and by Fisk & Hatch $877,000. At about 2.30 o'clock a dispatch was received from Secretary Sherman directing the acceptance of $2,000,000 of the bonds offered. Assistant Treasurer Hillhouse thereupon accepted the following: $738,000 sixes of 1880 at 104 and under, $1,262,000 fives of 1881 at 103.44 and under.

The specie importations for the week ending March 6, amount to $101,147, including $35,539 gold and $65,635 silver. Since the 1st of January the importations will reach $1,867,764, consisting of $841,990 gold, and $1,025,552 silver. From the 1st of August, 1879, to March 5th, 1880, there has been a total importation of $79,872,552, of which $70,096,922 is gold and $3,775,630 silver.

In the money market the ruling rate for call loans has been 5 @ 6 %, exceptional loans being made as low as 4 %.

Railroad bonds have been strong and active, the special features being the issues of the Erie, the Chesepeake and Ohio, Mobile and Ohio and the Ohio Central.

The stock market has been alternately strong and heavy, but strong in the main, and the general list advanced 1 @ 10 %. Later, however, the market became weak, and prices declined. At the close the whole market was weak, with quotations as given below:

The bank return shows a loss of $1,513,550 in surplus reserve, which now stands at $3,314,550, against $4,215,725 at this time last year, and $13,983,825 at the corresponding period in 1878. The loans show a gain this week of $3,589,900, the specie is up 641,700, the legal tenders are decreased $2,037,600, the deposits other than United States are up $470,600, and the circulation is decreased $171,900.

The following is an analysis of the bank totals of this week compared with that of last week:

	Feb. 28.	Mar. 6.	Comparisons.
Loans	$293,545,600	$297,135,500	Inc. $3,589,900
Specie	57,413,300	58,055,000	Inc. 641,700
Legal t'nd'rs	14,168,000	12,130,400	Dec. 2,037,600
Tot. reserve.	71,581,300	70,185,400	Dec. 1,395,900
Deposits	271,012,800	271,483,400	Inc. 470,600
Reserve required.	67,753,200	67,870,850	Inc. 117,650
Surplus.	3,828,100	2,314,550	Dec. 1,513,550
Circulation.	21,174,000	21,002,100	Dec. 171,900

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

IMPORTS.

For the week ended March 6:

	1878.	1879.	1880.
Dry goods	$2,351,173	$1,855,698	$5,032,307
General mdse	3,301,231	3,450,320	8,845,739
Total for week.	$5,652,404	$5,306,018	$13,8 8,046
Prev. reported.	44,271,760	44,561,218	69,620,800
Since Jan. 1	$49,924,164	$49,867,236	$83,493,846

Included in the imports were items of merchandise valued as follows:

	Quantity.	Value.
Anvils	218	$1,727
Brass goods	38	7,841
Bismuth	8	3,685
Bronzes	31	8,497
Chains and anchors	333	9,889
Copper		63,35
Cutlery	231	62,622
Guns	74	14,265
Hardware	103	10,347
Iron, hoop, tons	979	46,104
Iron, pig, tons	5,418	89,580
Iron, sheet, tons	189	10,445
Railroad bars	6,408	49,698
Iron tubes	190	599
Iron ore, tons	1,257	5,305
Iron, other, tons	8,357	225,597
Lead, pigs	1,519	9,474
Metal goods	4,465	29,184
Nails	57	3,954
Needles	32	12,231
Nickel	16	2,151
Old metal		1,258
Platina	3	15,005
Plated ware	1	20
Percussion caps	55	8,573
Saddlery	18	3,966
Steel	8,601	49,819
Spelter	441,068	21,597
Silverware	3	105
Silver ore	20	101
Tin, bxs	32,112	225,318
Tin, 28,361 slabs; lbs., 2,273,640		488,928
Teasles	12	488
Wire	2,123	17,158
Zinc	224,396	11,405

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended March 9:

	1878.	1879.	1880.
For the week	$8,147,765	$5,763,155	$7,775,954
Prev. reported	52,446,926	47,986,051	47,745,114
Since Jan. 1	$60,594,691	$53,749,206	$55,521,068

EXPORTS OF SPECIE.

For week ended March 6:

Total for the week	$1,963,076
Previously reported	1,370,502
Total since January 1, 1880	$3,333,578

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's 1880 registered	103¾	104
U. S. 5's 1880 coupon	103¾	104
U. S. 6's 1881 registered	105½	105⅝
U. S. 6's 1881 coupon	105½	105⅝
U. S. 5's 1881 registered	103⅝	103¾
U. S. 5's 1881 coupon	103⅝	103¾
U. S. 4½'s 1891 registered	107⅛	108
U. S. 4½'s 1891 coupon	107¾	108
U. S. 4's 1907 registered	105⅛	105¼
U. S. 4's 1907 coupon	106⅝	106⅞
U. S. Currency 6's 1895	125	—
U. S. Currency 6s 1896	125	—
U. S. Currency 6s 1897	125	—
U. S. Currency 6s 1898	125	—
U. S. Currency 6s 1899	125	—

The following were the closing quotations of active shares:

	Bid.	Asked.
Alton and Terre Haute	23½	25½
" " Pref	—	64
American District Telegraph	71	72½
Atlantic and Pacific Telegraph	45½	46
Boston Water Power	15	17⅛
Burlington and Quincy	143½	144
Canada Southern	66¾	67
Cent. Arizona	9	9⅛
Col., Chicago and Indiana Central	17¼	17½
Clev., Col., Cin. and Indianapolis	78	78¼
Cleveland and Pittsburgh	111	112½
Chicago, St. Paul and Minn	55	55¼
Chicago and Alton	106½	107¼
" " Pref	119	—
Chesapeake and Ohio	23¾	23½
" " 1st Pref	32	32½
" " 2d Pref	24¼	25½
Chicago, St. Louis and New Orleans	40¼	40¾
Central Pacific	80¾	81¾
Delaware, Lack. and Western	92¾	92⅞
Delaware & Hudson Canal	83¾	84⅛
Express—Adams	112	114
" American	57½	58
" United States	48¼	49
" Wells, Fargo & Co	108	109
Erie	44¼	44⅞
Fort Wayne	118	—
Harlem	—	176
Hannibal and St. Joseph	38⅞	39
" " Pref	72⅛	72½
Houston and Texas	87	87½
Illinois Central	102	102½
Kansas and Texas	44⅛	44¼
Lake Shore	109⅛	109¼
Lake Erie and Western	34	34¼
Little Pittsburgh	10	10⅜
Louisville and Nashville	158	160
Louisville, New Albany and Chic	97	103
Marietta and Cincinnati Preferred	11	11¼
Metropolitan Elevated	116¼	117
Michigan Central	92⅜	92½
Morris and Essex	103	108½
Mobile and Ohio	25	26
Manhattan Railway	50	50¼
Nashville and Chattanooga	111	112
New York Central	131½	131¾
New York Elevated	124	125½
New Jersey Central	87	87¼
New Central Coal	31½	32
Northwest	92⅜	92⅞
" Pref	106½	106⅞
Northern Pacific	32¼	33¼
" Pref	55¾	56¼
Ohio and Mississippi	37⅛	37¼
" " Pref	72	75
Ontario Silver	—	37
Pacific Mail	51⅜	54½
Quicksilver	—	21⅛
" Pref	69	70½
Reading	69¼	69⅞
Rock Island and Pacific	152	154
St. Louis and Iron Mountain	60½	60¾
St. Louis and San Francisco	44¼	45
" " Pref	58	59¼
" " 1st Pref	82	83
St. Paul	81	81½
" Pref	104	104¼
Standard	29	29¼
Union Pacific	92¼	92½
Wabash and Pacific	44⅜	44½
" pref	68⅜	68½
Western Union Telegraph	111½	111⅝
Climax	2¾	3⅜
Ontario and Western	28¼	28¾
Montauk Gas	50	52

GENERAL HARDWARE.

We have fewer changes in prices to report this week than during any of the weeks since the upward tendency of values was developed, and prices are more steady and settled than we have seen them in a long time. The demand for goods on new orders is not as active as it was in the early part of February, but this is accounted for in a great measure by the fact that the large trade have placed the bulk of their spring orders, and the retail trade of the country do not usually come into the market so early in the season. Another reason is found in the bad condition of the roads in the interior and the fact that navigation is not yet open. With fine and settled weather a return to greater activity is confidently looked for.

The American Screw Company, in a circular issued under date of 5th inst., and which we print below, announces a reduction in the price of Flat Head Wood Screws from discount 35 per cent. to discount 40 per cent. This action has caused a great deal of comment in the trade, and is generally regarded as injudicious and unnecessary. The American Screw Company, in a letter under date of 9th inst., give the following reason for making the reduction: "Referring to our recent reduction in the price of Screws would say, we had anticipated that our prices would continue, in sympathy with the general market, but a disposition to add to the Screw machinery of this country (entirely unexpected by us) has compelled the adoption of the opposite course." With this explanation we think that much of the disquietude in regard to the stability of prices of General Hardware which this reduction has occasioned will be set at rest, as it is obvious that the action was not based on the ground of overvaluation or oversupply, it being well known that the Screw manufacturers are pretty well sold ahead.

The Russell & Erwin Mfg. Co. and the Union Steel Screw Co. have issued circulars of the same tenor, under date of 6th inst. The Charles Parker Co. inform us that they will not issue a circular at present, but they will supply Screws at same prices as other manufacturers.

The American Screw Co.'s circular is as follows:

PROVIDENCE, R. I., March 5, 1880.

To the Hardware Trade.—Cancelling former quotations, we hand you below our present prices for Wood Screws. Freight allowed to New York, Boston, Philadelphia, Baltimore and Cleveland. Terms cash 30 days from date of invoice, in funds at par in New York, Boston, Philadelphia, or Baltimore. Soliciting a continuance of your orders, we are, yours very truly,

AMERICAN SCREW COMPANY.

HOME TRADE—DOMESTIC LIST.

	Dis. per cent.
Flat Head Iron	40
Round Head "	30
Flat Head Brass	30
Round Head "	15

FOREIGN TRADE—EXPORT LIST.

Flat Head Iron, "American"	65
" " " "Continental"	70

Certificate of foreign lading to be furnished for obtaining rebate of duty on iron.

We have received the following letter on the same subject:

To the Editor of The Iron Age.—DEAR SIR: In view of our circular of the 6th instant, wherein we reduced our price for Flat Head Iron Wood Screws from 35 per cent. to 40 per cent. discount, to meet the quotation of another maker, we deem it proper to say to the trade that, in our opinion, the decline is not by reason of any lessening in the value of the goods, costs of material and labor considered, but rather against those actual demands for higher selling rates than have recently prevailed, and wholly on account of differences of opinion among certain of the manufacturers as to the right to be, and to make Screws, on the part of other of the makers.

Our recent purchase of the Walter Aiken machinery will add much to our previous production, and we shall faithfully endeavor to supply all legitimate demands upon us for the various kinds of Screws we manufacture, including Flat Head Iron Wood Screws, at rates current in the market. The question as to whether there is too much or too little Screw-making machinery in the country, or how it is distributed, does not specially agitate us at this time.

Yours respectfully,
RUSSELL & ERWIN MFG. CO.
M. J. WOODRUFF, Ass't Treas.
New York, March 10, 1880.

The manufacturers of Strap and T Hinges held a meeting in this city to-day, and, as will be seen by the following communication, the price remains as before

NEW YORK, March 10, 1880.

To the Editor of The Iron Age.—DEAR SIR: At a meeting of Strap and T Hinge Manufacturers held to day, it was resolved that for the present the price of Strap and T Hinges remains unchanged; subject, however, at any time to an advance at the discretion of the Executive Committee.

A. H. SWENY, President.

We have received the following circulars:

NOTICE TO THE TRADE.

PHILADELPHIA, March 9, 1880.

On and after this date the discount to retail dealers on Mrs. Potts' Sad Irons will be 20 per cent. from list prices.

ENTERPRISE MFG. CO.
AMERICAN MACHINE CO.

PHILADELPHIA, March 9, 1880.

On and after this date the discount on our general goods—including all goods manufactured by us except Mrs. Potts' Sad Irons—will be 15 per cent. to retail dealers.

ENTERPRISE MFG. CO.

The following explains itself:

NOTICE.

MILL HALL, PA., March 5, 1880.

We have made arrangements with Messrs. Durrie & McCarty, of 97 Chambers street and 81 Reade street, New York, to represent us as our agents, and have given them full powers to sell at all times at our lowest and best factory prices and terms. We purpose carrying with them a stock of our Axes for immediate delivery when required.

ROBERT MASN & SONS.

We have received the following notice:

PHILADELPHIA, March 10, 1880.

The following parties have agreed to charge for tabs on cross-cut saws from and after the 15th of March:

HENRY DISSTON & SONS, Philadelphia, Pa.
BRANCH, CROOKES & CO., ST. LOUIS, Mo.
E. C. ATKINS & Co., Indianapolis, Ind.
R. HOE & CO., New York.
JAS. OHLEN & CO., Columbus, Ohio.
WHEELER, MADDEN & CLEMSON, Middletown, N. Y.
HARVEY W. PEACE, Brooklyn, N. Y.
AMERICAN SAW CO., Trenton, N. J.
CURTIS & CO. MFG. CO., St. Louis, Mo.
WOODROUGH & MCPARLIN, Cincinnati, Ohio.
HUBBARD, BAKEWELL & CO., Pittsburgh, Pa.
RICHARDSON BROS., Newark, N. J.

Agricultural implements are scarce in this market, and manufacturers generally have orders sufficient on their books to keep them employed for a long time. In consequence these goods are quoted from store at discount 35 per cent., although the factory price, discount 40 per cent., has not been changed.

The business in Nails during the week was light. We hear of some outside lots, bought speculatively, being pressed on the market, and it is thought that they would be closed out at a price below the current rate. Manufacturers, however, are holding prices firmly, and we quote 10d. to 60d., $5.40, net, in small lots, and in lots of 200 kegs and over, $5.30, net.

The Western Nail Association held a meeting in Pittsburgh to day, and adjourned for one week without taking any action in regard to prices. The roads in the West are in a very bad condition, and in consequence stocks of Nails are accumulating. Owing to these conditions, it is probable that at the meeting next week the subject of curtailing production will be considered.

Andrew Gardner, Weyauwega, Wis., offers for sale a well-established Hardware business. This seems to present a good opportunity for investment. His reason for selling is ill health, which necessitates a change of climate. In an advertisement among Special Notices further information concerning the property will be found.

Graham & Haines have placed on the market "The Belmont Egg Beater," which they claim is the best and cheapest Egg Beater yet offered to the trade. They quote these goods at $15 per gross, net.

The Southwark Hardware Co., of Philadelphia, have recently issued a new catalogue, in which they illustrate the various kinds of Scales manufactured by them. On page 10 of their catalogue they say: "Our second grade, known as the Crown Scale, works on steel pivots cast in the beam. This Scale is intended to take the place of a class of Scales in the market made in the same manner, and sold as first quality. We would call the attention of the trade to the very low figures at which we are offering this line of goods." The advertisement of the firm may be found on page 22.

Stanley G. Flagg & Co., manufacturers of Steel Castings, have removed their office and warehouse from 216 and 218 North Third street to their new works, northwest corner of Nineteenth street and Pennsylvania avenue, Philadelphia. Notice of their removal reached us too late to alter the address in their advertisement which appears on the last page of this paper.

We invite attention to the advertisement of P. & F. Corbin, regarding the decision of Judge Shipman in the matter of their "Amber Bronze," which appears among "Special Notices."

Bissell & Welles announce in their advertisement, which appears among "Special Notices," a large trade sale of Hardware, Cutlery, House Furnishing Goods, &c., on Wednesday, Thursday and Friday, March 24, 25 and 26, at their salesrooms, Nos. 83 Chambers and 65 Reade streets. Further particulars regarding the sale will be found in the advertisement referred to.

The Richmond and Allegheny R. R. Co. invite proposals for furnishing and erecting four bridges over the James River, also two bridges over smaller streams. We invite the attention of bridge builders to their advertisement, which appears among "Special Notices," and in which further particulars regarding the required structures will be found.

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, Wednesday, March 10, 1880.

Scotch Pig—Since last report the market has been very much depressed, but there is now a better feeling, and prices are steady at a decline of 7/6 on Gartsherrie, 4/ on Coltness, 5/ on Glengarnock, and 6/ on Eglinton, from last week's quotations. The following are to-day's quotations:

Gartsherrie	70/
Coltness	76/
Glengarnock	72/6
Eglinton	65/

Manufactured Iron—Is quiet and prices steady. We quote Best Staffordshire Bars at £9.

Steel Rails.—The market is very dull, with little demand and prices nominal. We quote unchanged at £9. 5/ @ £10.

Iron Rails—Are in little request and transactions are small. We quote Welsh, nominally, £8. 10/ @ £8. 15/.

Old Rails.—Are in large supply, with little or no demand. Prices are weak. We quote, nominally, £6. 10/.

Wrought Scrap—Is at a standstill and nothing is doing. We quote, nominally, £6. 5/.

IRON.

American Pig.—There is no change to report in the condition of the Iron market this week. The inquiry continues light and prices are more in buyers' favor, although manufacturers of brands best known in this market show no disposition to sell below the basis of $40 for No. 1 Foundry. The sales reported during the week are only of a retail nature. We quote Foundry No. 1 $39 @ $40; Foundry No. 2, $37 @ $38; Gray Forge, $36.

Scotch Pig.—We cannot report any improvement in the tone of the market for foreign Iron. The arrivals this week amount to about 3000 tons, a considerable falling off from the amount reported a week ago. The only sales we hear of are 200 tons Glengarnock at $30 and 200 tons of the same brand at $31. Our cablegram shows a declining market on the other side, and here quotations are off a trifle from the figures quoted last week. We quote Eglinton $29.50 @ $30; Coltness, $33.50 @ $34; Glengarnock and Gartsherrie, $30 @ $31.

Rails.—A sale is reported of 10,000 tons American Steel Rails for delivery during the current year, on terms which have not transpired. In foreign Rails, either Steel or Iron, no new business has come to our knowledge. We repeat former quotations, which, however, in the present condition of the market must be considered only nominal, viz.: Steel, $82.50 @ $85; Iron, $65 @ $68.

Old Rails.—The market is quiet, and the week has passed without bringing to light any transactions worthy of mention. It is rumored that an offer by a consumer has been made for 10,000 tons of Old Rails, to import, at a price equivalent to between $40 and $41 here, but whether the offer was accepted or declined we did not learn. We quote: Ts, $41 @ $42; and D. H., $42 @ $43.

Scrap.—The demand for Scrap Iron is limited, and prices are somewhat unsettled. Holders' views are for No. 1 Wrought $42 ex ship, but it is thought that this price would be shaded. A sale is reported of 150 tons at $42.50, from yard. We quote No. 1 Wrought, from yard, $43 @ $45.

METALS.

Since our last report the sales of Lake Superior Copper have been confined to some 250,000 pounds at 23¾¢ @ 24¢, at which figure the market closes quiet, but with a good deal of firmness. Baltimore may nominally be quoted as much. London cables £68. 10/ @ £69 for Chili Bars and £78 for Best Selected. A few statistics relating to the position on this side, for which we are indebted to Messrs. F. W. Heyne & Bro., may not prove out of place. The stock on Jan. 1, 1880, was estimated to be at New York: Lake Superior Ingot (5000 barrels) 4,000,000 pounds; do. Cake and Bars, 1,000,000 pounds; Baltimore and other brands, 500,000 pounds; at Detroit at smelting works, 1,000,000 pounds; on Lake Superior and on the way by rail, shipped in December, after the close of navigation, 3,500,000 pounds; together, 10,000,000 pounds. The shipments have been: I. From Lake Superior, overland, from December 1, 1879, to the end of February, 1880, Refined Copper, 8,000,000 pounds, and deducting therefrom the stock stated above, 3,500,000 pounds, it will leave 4,500,000 pounds. II. From Lake Superior to the Detroit Smelting Works, 700 tons Ore, containing fine Copper, 1,000,000 pounds. III. From Europe, Lake Superior Ingot Copper returned in 1880, 1,000,000 pounds, and, furthermore, Best Selected English, also from Europe, 1,000,000, constituting an aggregate supply of 17,500,000 pounds, from which there will have to be deducted the consumption in January and February, which we estimate at 8,500,000 pounds, leaving an available supply on March 1, 1880, of 9,000,000 pounds. To these figures we add the following remarks: I. The shipments from Lake Superior overland have been caused to be made so early by the strong demand for Copper from manufacturers in December and January last, and by the desire on the part of the mining companies to save taxes which are levied on the amount of stock at the works on March 1 each year. At least seven-eighths of those shipments went direct into the hands of consumers. II. The shipments from Lake Superior after March 1 will be insignificant, the principal mines having stopped them altogether. III. The stock of Lake Superior Copper in Europe is now pretty well exhausted, and, therefore, no further reimportation from that quarter is expected on this side. IV. The arrivals from Lake Superior after the opening of navigation will naturally be very light, in view of the heavy shipments that were effected during the winter season. V. Manufacturers are working to their full capacity, and the prospects are that the consumption at least will amount this year to an average of 4,000,000 pounds per month. There has been no change in the manufactures of Copper here since our last report. We quote: Braziers' Copper, 34¢; Bolts, 34¢; Circles, 37¢, and Sheathing Copper, 32¢.

Tin.—Our market has, as was expected, ruled excessively dull. The jobbing demand is small, and the only speculative sale made during the week has been one of 75 tons Straits at 21½¢, purchased with a view to save the market from a rapid decline. We quote large lots Straits Tin to-day 21½¢ @ 21¾¢; English Refined, 21¾¢ @ 22¢; English Common, 21½¢ @ 21¾¢; Australian, 21½; Billiton, 21¢, and Banca, 24¢ @ 25¢. London has declined with Straits to £89 and Singapore to $29.50. The large shipments from the Straits this way in December and January, as given in the mail advices which have now reached us from there, have fairly staggered the metal trade on this side. At the same time we hear from Tasmania, also by mail, that at the high prices ruling, that colony is producing most actively. The same will no doubt be the case on the mainland of Australia, and it will not take a long time when in all likelihood the statistical position of Tin will be about as unfavorable as it was at times previous to the late revival. At least these are the apprehensions, and it remains to be seen whether the increased consumption—which nobody denies—can cope with such overwhelming supplies during the remainder of the current year. In the *Tin-Plate* market a fair consumptive demand continues to prevail. Large consumers are reported to carry small stocks only; their reappearance in the market is therefore expected at an early date. We quote at the close large lines, ordinary brands, per box: Charcoal Bright, $9.75, fair grades being firmly held; ditto Ternes, $8.50 @ $8.75; Coke Tin, $7.50 @ $7.75, and ditto Ternes, $7.50; we do not, therefore, see the heavy fall alluded to in one of the daily papers.

Lead.—The Lead market persists in its quiet mood, there still being a lack of demand. We quote Common Domestic, 5.90¢ @ 5.95¢. There has transpired nothing in Refined, which may nominally be quoted at 6¼¢. We quote: Sheet Lead, 9¢; Pipe, 8½¢; Tin-lined Lead Pipe, 15¢, and Block-Tin Pipe, 45¢, less the usual discount to dealers.

Spelter and Zinc.—This metal shares the general stagnation which has seized upon the remainder. We continue our quotations of 6¾¢ @ 7¢ for both Common Domestic and Silesian. Sheet Zinc is worth 8⅛¢.

Nickel.—There is no change. A moderate demand prevails at the steady price of $1.40 for prime American.

Antimony—Has been moderately active at the ensuing rates: Johnson's, 20¢; Hallet's, 21¢, and Cookson's, 25¢.

COAL.

The trade for the past week has not shown any very marked changes. The active demand for the large sizes has continued, and orders for them have been taken with some reluctance, even when a very fair advance has been obtained. The furnace demand still keeps the large sizes scarce, everything that can by any possibility be used by them being taken. A very small quantity of "manufactured" Coal is of course produced. Mr. Saward estimates that the falling off in the Domestic sizes amounts to 75 per cent. of last year's production. The smaller tonnage in the Domestic sizes makes itself felt in the diminished quantity of Pea and Buckwheat Coal. These are largely used in manufacturing, and the result is that they are very strong and active. The activity of the manufacturing sizes, both small and large, is so great as to impart a firmness to even the domestic sizes, Stove and Chestnut, which are actually slow of sale. These the companies seem to be stocking, preferring to hold them, in hope of a better demand later in the season, to rushing them off now, and thereby tending to break down the market. The shipments of Coal show a decided falling off in quantity when compared with last year. So far the restriction of tonnage by means of the half-time arrangement has been very strictly carried out.

Prices are closely adhered to. The last circular of the Delaware, Lackawanna and Western quotes Lump, Steamer, Broken and Egg at $3.70; Stove, $4, and Chestnut, $3.90. Lehigh Coals are quoted at from $4 to $4.25 for Broken, with Egg and Stove at about $4 and Chestnut at about $3.75.

The Philadelphia and Reading circular, to take effect the 15th, quotes Broken, Egg and Stove at $4 for the hard White Ash, and $3.70 for the free burning Broken and Egg, and Stove $4. Taken altogether, the circulars show an upward tendency.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending March 9, 1880:

Hamburg.

	Quan.	Val.
Ptm., gls.	532,014	$42 558
Cement, case.	1	110
Hdw., cs	77	1,499
Tinware, cs	8	200
Gas fixt., pkgs	7	300
Stoves, pkgs	6	600
Sew. mach., cs	27	2,529
Mf. iron, pgs.	4	260
Lub. oil, gals.	135	65
Belting, cs	15	4,282
Sew. mach., cs	100	2,000
Ag. imp., pgs.	530	16,705
Mach'y, cs	34	3,575
Emery wh., bx	1	107

Danzig.

Ag. imp., pkgs	179	2,000

Dutch East Indies.

Ptlm., gls.	791,000	95,415

Bremen.

Lub. oil, gals.	3850	537
Grindston., bx	100	200
Wringers, bx.	4	162
Mf. iron, pkgs	15	323
Ag. imp., pkgs	21	1,179
Pltd ware, cs.	4	150

Dutch West Indies.

Hdw., cs	15	367
Mach'y, cs	1	1,0
Ptlm., gals	500	65
Glassw'e, cs	3	42

Rotterdam.

Hdw., cs	11	253
Ag. imp., pkgs	26	1,447
Mach'y, cs	9	610
Ore, tons	149	900
Lub. oil, gal.	22,486	6,347
Burners, cs	1	108
S. paper, bales	21	100

Antwerp.

Ag. imp., pkgs	146	8,280
Lub. oil, gals.	5946	713
Car wheels	50	350
Tacks, cs	96	771
Hdw., cs	30	655
Ore, tons	153	1,000
Ptlm., gals.	564,751	40,982
Anthrace., cks	30	3,800
Belting, box	1	94
Sew. mach., cs	68	983

Stettin.

Ptlm., gals.	116,705	8,500

Elsinore.

Ptlm., gals.	122,042	9,376

Leith.

Lub. oil, bbls.	130	951

Hull.

Pumps, pkgs	9	400
Ag. imp., pgs	55	3,580
Carbines, case	1	73

Glasgow.

Belting, cs	12	4,382
Mach'y., pkgs	3	164
Hdw., cs	9	400
Cop. plts., cs.	9	1,701

London.

Mf. iron, pkgs	64	4,522
Ag. imp., pgs.	54	1,214
Hdw., cs	263	3,485
Ptlm., gals.	50,011	6,270
Lub. oil, gal.	50,257	8,536
Horsenails, pk.	63	950
Sew. mach., cs	573	10,825
Mach'y, pkgs.	71	3,250
Wringers, cs.	12	300
Emery, kegs	3	168

Cuba.

Mf. iron, pkgs.	3139	4,353
Hoops	89,000	2,867
Coal, tons	460	1,584
Mach'y, pkgs.	69	2,724
Hdw., cs	103	2,078
Glassware, cs	26	662
Ptlm., gals.	23,900	3,137
Nails, bxs	15	130
Fire engine	1	360
Tel. mtls., pgs	2	150
Zinc, bxs	8	503
Mach. oil, gals	800	320
Sew. mach., cs	152	2,973
Iron, pkgs	1606	8,000
Brass tub	1	72
Ag. imp., pkgs.	12	967
Notions, cs	5	295
Nails, kegs	55	263
Gas fixts., cs	1	160

Luarca.

Iron safe	1	150
Mach'y, cs	3	403
Scales, bxs	5	45
Glass, bxs	3	74
Pumps, pkgs	2	81

French West Indies.

Nails, kegs	65	369
Mf. iron, pkgs.	3	40
Pumps, pkgs.	2	150
Sew. mach., cs	5	244
Ptlm., gals	4250	503
Hdw., cs	3	181

Cette.

Ptlm., gals.	89,212	6,802

Bilbao.

Sew. mach., cs	1	20
Ptlm., gals.	125,180	13,144

United States of Colombia.

Mf. iron, pkgs	63	969
Shoe nails, cs.	100	2,912
Pumps, pkgs	13	271
Cartridges, cs	6	174
Powder, lbs.	6259	1,183
Irons, pkgs	158	316
Rr. mtls., pgs.	14	392
Telephns., pgs	23	2,500
Car wheels	12	200
Zinc, cask	1	92
Engine	1	1,600
Revolvers, cs.	2	247
Ptlm., gals.	4424	593
Nails, kegs	6	53
Mach'y, pkgs.	152	7,973
Hdw., cs	137	3,563
Cutlery, cs	116	2,592
Pistols, cs	3	690
Wire, reels	181	1,751
Glassware, cs	30	393
Tel. mtls., pgs	118	2,890
Shot, kegs	26	339
Guns, cs	2	124
Pltdware, cs	5	451
Ag. imp., pkgs	8	146

Brazil.

Shoe nails, cs.	26	212
Glassware, cs.	53	2,972
Ptlm., gals	2541	246
Cutlery, cs	84	2,049
Pltd. ware, cs	11	1,980
Sew. mchs., cs	36	785
Pumps, pkgs	4	138
Mach. oil, bbls	2	76
Tinware, cs	25	1,354
Car wheels	192	4,125
Iron safe	1	165
Hdw., cs	253	4,654
Ag. imp., pkgs	33	305
Mach'y, pkgs.	112	8,023
Car	1	95
Pistols, cs	2	319
Revolvers, cs.	1	80
Irons, cs	212	1,195
Car mtls., pgs	25	1,355
Nails, cs	30	260
Mf. iron, pkgs	45	848
Lub. oil, gals.	725	360

Trieste.

Ptlm., gals.	160,160	13,213

Oporto.

	Quan.	Val.
Ptlm., gals	171,091	$13,425

Venezuela.

Mach'y, pkgs.	37	1,454
Sew. mchs., cs	88	2,102
Hdw., cs	137	2,686
Mf. iron, pkgs	106	472
Pltdware, cs	6	566
Cartridges, cs.	1	44
Tinware, cs	2	75
Shot, bxs	4	60
Ptm., gls	5702	663
Revolvers, cs	4	833
Powder, lbs	200	150
Ag. imp., pkgs	14	113

Madagascar.

Petlm., gals.	11,000	1,300

Naples.

Ptlm., gals.	101,326	7,979

Mexico.

Ptlm., gals.	40,858	5,157
Mach'y, pkgs.	253	19,335
Mf. iron, pkgs	656	7,359
Hdw., cs	277	8,393
Wire, pkgs	10	126
Glassware, cs.	188	3,379
Pistols, cs.	5	1,799
Cartridges, cs	188	4,853
Rifles, cs	13	3,875
Gun boxes, cs.	51	383
Belting, bales	2	97
G'dstones, pgs	24	43
Firearms, cs.	8	3,762
Cars	2	650
Springs, bxs.	59	1,475
Telephones, cs	1	389
Wire, reels	200	1,575
Coal, tons	178	890
Lead, pigs	7	35
Nails, kegs	407	2,484
Tacks, cs	4	100
Sew. mach., cs	283	3,372
Ag. imp., pkgs	209	5,846
Cutlery, cs	2	3,230
Pumps, pkgs.	4	180
Gas fixt., cs	3	293
F. engines, pgs	10	737
Tinware, cs	2	80
Nails, pkgs	61	1,303
Carbines, cs	26	7,400
Revolvers, cs.	1	481
Pri. shells, cs.	1	72
Copper, cs	3	762

Canada.

Mach'y, cs	3	195

British North American Colonies.

Ptlm., gals	800	88
Coal, tons	3	14

British East Indies.

Ptlm., gals.	560,360	63,103

Marseilles.

Ag. imp., pkgs	225	6,350

Bordeaux.

Ag. imp., pkgs	356	14,050

Dunkirk.

Ptlm., gals.	192,968	14,000

Danish West Indies.

Hdw., cs	10	57
Ptlm., gals	500	67

Liverpool.

Ptlm., gals.	63,945	8,058
Tel. mtls., pgs	5	856
Hdw., cs	87	5,077
Ptlm., gals.	220,151	17,632
Glass cases, cs	41	410
Pistols, case	1	400
Lub. oil, gals.	22,038	4,819
Mach'y, pkgs.	02	2,770
Ag. imp., pkgs	18	1,320
Pltdw'e, cs	2	135
Lub. oil, bbls.	130	3,750
Belting, cs	2	356
Metal, cs	4	1,500

Bristol.

Glassware, cs.	9	225
Ag. imp., pkgs	253	1,000
Mach'y, cs	3	1,100

British West Indies.

Petlm., gals.	12,890	1,663
Spikes, kegs	14	122
Glassw'e, pgs.	108	1,256
Nails, kegs	186	1,115
Silverw'e, cs	2	200
Yel. mtl., cs	10	796
Nails, pkgs	6	74
Tinware, cs	10	152
Anchors	6	23
Mf. iron, pkgs	109	160
Wire, reels	45	370
Hdw., cs	87	1,243
Ag. imp., pkgs	9	204
Britanwe., pgs	1	79

British Australia.

Sew. mach., cs	134	5,105
Hdw., cs	746	12,031
Cartridges, cs	2	31
Grindstones	12	47
Gas fixt., pkgs	1	50
Iron safes	5	650
Mf. iron, pkgs	28	1,840
Ag. imp., pkgs	83	1,069
Ptlm., gals.	61,920	8,109
Cutlery, cs	30	1,382
Pumps, pkgs	5	345
S. rollers, cs	2	115
Pltdware, cs	28	5,386
Belting, bales.	2	135
Tinware, cs	3	110
Glassw'e, cs	17	551
Mach'y, pkgs.	62	4,934

Havre.

Silverw'e, cs	1	500
Ag. imp., pkgs	2436	81,852
Lub. oil, bbls.	12	150
Mach'y, cs	248	18,491
Sew. mach., cs	305	3,600

Central America.

Bridges	2	16,632
Iron, bars	25	613
Rifles, cs	1	157
Tinware, cs	4	164
Hdw., cs	31	704
Locomotive	1	8,948
Mf. iron, pkgs	60	420
Mach'y, pkgs.	90	2,395
Car	1	4,566
Cartridges, cs	1	52

Porto Rico.

Hoops	55,000	1,255
Ag. imp., pkgs	30	397
Hdw., pkgs	68	1,002
Glassw'e, pgs.	34	705
Pltd. ware, cs.	2	124
Tinware, cs	4	100
Iron, bars	20	75
Mf. iron, pkgs	108	1,404
Cars	34	1,605
Ptlm., gasls.	6899	966
Sew. mach., cs	32	1,158
Grindstones	400	320
Mach'y, pkgs.	4	76
Nails, kegs	10	61
Rr. matl., pgs.	2669	10,798

Hayti.

Sew. mach., cs	16	605
Hdw., pkgs	54	841
Nails, kegs	15	89
Ptlm., gals	730	99
Ptlm., gals	7846	928
Glassw'e, pgs.	28	468
Mach'y, pkgs.	220	7,575

China.

Cartridges, cs	750	23,000
Mf. iron, pkgs	29	306
Sew. mach., cs	22	400
Ptlm., gal	33,400	3,730
Glassw'e, pgs.	201	3,550

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending March 9, 1880:

Hardware.

Baldwin Bros. & Co.
Hdw., cs., 1
Barbour Bros.
Machy., cs., 6
Baring Bros. & Co.
Hdw., cs., 7
Billinber Ernest,
Ironware, cks., 2
Ironware, cs., 15
Bloomfield J. C. & Co.
Machy., pkgs., 12
Machy., cs., 5
Castings, 5
Plates, 2
Boker Hermann & Co.
Hdw., cs., 12
Hdw., csks., 38
Bruce & Cook,
Wire, bdls., 60
Cary & Moen,
Wire, bdls, 676
de Planque E.
Mdse., pkgs., 3
Dolge A.
Steel wire, csks., 2
Dreyfus, Weiller & Co.
Hdw., cs., 2
Field Alfred & Co.
Hdw., csks., 2
Hdw., cs., 21
Folsom H. & D.
Guns, cs., 1
Friedmann & Lauterjung,
Mdse., pkgs., 3
Gopel T.
Machy., pkgs., 25
Graef Cutlery Co.
Mdse., pkgs., 5
Howard Bros. & Read,
Hdw., cs, 2
Hdw., pkgs., 5
Lalance & Grosjean,
Mdse., pkgs., 2
Lockwood Arthur L.
Files, cks., 4
Mdse., cs., 1
Loewi Edgar,
Hdw., cs., 1
McCoy & Co.
Chains, cks., 11
Milliken & Smith,
Wire, bdls., 3629
Nathan & Dreyfus,
Mdse., pkge., 1
Overton & Co.
Cutlery, cs., 1
Polgram & Meyer,
Machy., cs., 18
Fly-wheel, 1
Weights, machy., 8
Rogers H.
Mdse., pkgs., 5
Schoverling, Daly & Gales,
Hdw., cs., 7
Schuyler, Hartley & Graham,
Mdse., pkgs., 2
Guns, cs., 15
Scott U. P.
Hdw., cs., 4
Struller, Lau & Co.
Mdse., pkgs., 2
Tillotson L. G. & Co.
Wire, lots, 920
Waefelaer & Duysters,
Hdw., cks., 28
Hook nails, csks., 138
Wetzlar M.
Mdse., pkgs., 3
White John S.
Machy., cs., 5
Wiebusch & Hilger Hdw. Co.
Cutlery and hdw., pkgs, 95
Wolff S. N. & Co.
Ironware, pkgs, 40
Order,
Files, cks., 38
Gun stocks, cs., 4
Guns, cs., 6
Nails, kegs, 69

Iron.

Bank of N. Y. National Banking Assn.,
Punched oil bbl. hoops, 6993
Baring Bros.
Bars, 17,266
Pig, tons, 658
Bundles, 224
Wire rods, bdls., 830
Hoop iron, bdls., 140
Brown Bros. & Co.
Bars, 6029
Byrne Jos. & Co.
Bars, 5372
Bundles, 2868
Sheets, 1063
Cary & Moen,
Wire rods, bdls., 348
Bessemer rods, bdls., 78
Coddington T. B. & Co.
Sheet iron, bdls., 88
Crowell & Co.
Bars, 2760
Bar iron, bdls., 506
de Lima D. A. & Co.
Old rails, 535
de Milt, H. R.
Sheet iron, bdls., 371
Elliott, Sons & Co.
Ore, tons, 100
Henderson Jas.
Scrap, tons, 66
Lee Jas. & Co.
Pig, tons, 300
Lundberg Gustaf,
Coils iron, bdls., 226
Lundell Chas. G.
Pig, tons, 10
Merchants' Bank of Canada,
Sheet iron, bdls., 530
Mersick, C. S. & Co.
Bar iron, bdls., 470
Meyer Bros. & Co.
Old rails, pcs., 1970
Morton, Bliss & Co.
Blooms, 1373
Nevada Bank,
Pig, tons, 200
Ogden & Wallace,
Bar and hoop iron, bdls., 510
Pierson & Co.
Bars, 4900
Bundles, 463
Spinney J.
Old rails, pcs., 1573
Old rails, &c., lot, 1
Stroud W. L.
Sheet iron, bdls., 302
Williamson Jas. & Co.
Pig, tons, 100
Windmuller L. & Rolker,
Old rails, 1803
Winter, de Visser & Co.
Old iron, pcs., 142
Wolff, Kahn & Co.
Coiled rods, bdls., 410
Order,
Bars, 13,947
Bundles, 376
Crank pins Low-moor iron, 40
Iron tubes, 248
Old car wheels, tons, 239
Old iron, lbs., 182,790
Old railroad iron, tons, 600
Old rails, a lot
Old rails, pcs., 4656
Old rails, tons, 1543
Pig, tons, 1448
Punched iron tank plates, 309
Rails, 3065
Rods, lots, 238
Scrap, tons, 2170
Sheet iron, bdls., 334
Sheets, 381
Spiegeleisen, a lot
Spiegeleisen, tons, 126¾

Steel.

Baldwin Bros. & Co.
Cases, 3
Baring Bros. & Co.
Coiled steel, bdls., 508
Bundles, 456
Brown W.
Bundles, 201
Cary & Moen,
Bundles, 15
Casks, 20
Lockwood Arthur L.
Bars, 42
Bundles, 63
Wolff, Kahn & Co.
Pkgs., 150
Woodford W. O.
Bars, 73
Bundles, 382
Cases, 11
Order,
Bars, 2534
Bundles, 675
Old spring steel, tons, 60
Pkgs., 56
Sheets, 682
Tires, 86

Metals.

Ackermann J. H. & Co.
Antimony, csks., 4
Baring Bros. & Co.
Tin plates, bxs., 250
Byrne Jos. & Co.
Tin plates, bxs., 2422
Cort M. L. & Co.
Tin plates, bxs., 2295
Hagen & Billings,
Lead, bars, 691
Hallgarten & Co.
Ingot cop., csks., 42
Copper, csks., 50
Lamarche H.
Zinc, csks., 175
Merchants' Bank of Canada,
Tin plates, bxs., 371
Merchants' Dispatch Co.
Tin plates, bxs., 560
Meyer Moritz,
Lead, bars, 4516
Nevada Bank of San Francisco,
Tin plates, bxs., 183
Noel Auguste,
Tin foil, cs., 1
Phelps, Dodge & Co.
Black tag., bxs., 380
Rolled brass, cks., 3
Tin plates, bxs., 5927
Pratt C. & Co.
Tin plates, bxs., 240
Richardson W. S.
Old cop., pkgs., 4
U. S. Stamping Co.
Tin plates, bxs., 254
Williams J. T. & Co.
Antimony, cs., 16
Windmuller L. & Rolker,
Zinc, csks., 115
Order,
Black tag., bxs., 500
Copper, csks., 178
Nickel, bbls., 4
Old brass, csks., 37
Old cop., box, 1
Old metal, pkgs., 23
Regulus antimony, csks., 16
Spelter, plates, 3774
Tin plates, bxs., 8530
Yel. metal, hhd., 1
Zinc, plates, 1027

OLD METALS, PAPER STOCK, &c.

The Old Metal market is quiet this week, and presents no new features since our last report. The market for Rags and Paper stock is dull, what excitement there is being rather among the dealers than among the manufacturers.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy	per lb.	$0.21	@	...
Copper Bottoms	"	.16	@	.17½
Yellow Metal	℔ lb	.11	@	.12
Brass, heavy	"	.13	@	.14
Brass, light	"	.10	@	.11
Composition, heavy	"	.16	@	.17
Lead, heavy	"	.04¾	@	.05
Tea Lead	"	.04½	@	.04¾
Zinc	"	.04¾	@	.05
Pewter, No. 1	"	.12	@	.13
Pewter, No. 2	"	.07	@	.08
Wrought Iron	per ton	35.00	@	37.50
Light do	"	22.50	@	25.00
Stove Plate	"	15.00	@	17.00
Machinery do	"	22.50	@	25.00
Grate Bars	"	10.00	@	12.50

The prices current for Rags, &c., are as follows:

Canvas, Linen	per lb.	4½c.	@	c.
White Cotton, New	"	4½c.	@	....
" No. 2	"	3 c.	@	....
White, No. 1	"	6 c.	@	....
No. 2	"	4½c.	@	....
Seconds	℔ lb.	2½c.	@	c.
Soft, Woolens	"	15 c.	@	....
Mixed Rags	"	2 c.	@	3 c.
Gunny bagging	"	4 c.	@	....
Jute butts	"	2¾c.	@	....
Kentucky bagging	"	2 c.	@	3 c.
Book Stock	℔ lb.	3 c.	@	....
Newspapers	"	2½c.	@	....
Waste Paper and Scraps	"	1 c.	@	....
Kentucky Bale Rope	"	4 c.	@	..

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, March 9, 1880.

Pig Iron.—We have again to note a dull and somewhat weak market, with increasing evidence on the part of holders of a desire to realize. The outlook has not improved during the past few days, and it is probable that concessions will have to be made before much business can be done, not so much because consumption is falling off, but to meet foreign competition. The policy adopted by the furnace companies and ironmasters generally seems to have proved an unfortunate one, and sooner or later the mistake will have to be corrected. Large sales were made during the last month of 1879 at prices about $10 less than was quoted during the following month. The idea seems to have been to fill up with orders at about $30, and immediately after to make the price, say, $40, at which figure very few cared to buy, and at which, in consequence of previous sales, but few companies had anything to sell. The way things have turned out it seems that producers shut themselves out of the market at the high price, and offered an inducement of about $10 per ton for shipments of foreign iron (or, in other words, made a market for the English to sell on). Contracts made at the time mentioned are running out, and sellers are now confronted with large quantities of foreign Iron on the spot and to arrive. As a matter of fact, we have reason to believe that not more than 10% of the Iron consumed during the first three months of the year will cost over $30 per ton, notwithstanding quotations have been held at much higher rates nominally, thereby making a value which is likely to prove fictitious. A large proportion of contracts were made subject to prices current at time of delivery, and the way things look now it is doubtful whether, during the next three months, prices will be much, if any, higher than those ruling, at date of contract. The fatal error seems to have been in trying to carry up prices here without reference to the markets abroad. Whatever may be the ultimate outcome, it is evident that Pig Iron men, by their action as above mentioned, put the market in such a condition as to offer the greatest possible inducements for increased production and heavy shipments from England. At the present rate of consumption there is every reason to think that all the Pig Iron produced on this side could have been easily handled, but with increasing receipts from abroad, the future of the market seems very uncertain. The effect is more wide reaching than may seem at first sight. Consumers noting the advance of raw material, advanced prices of finished Iron, which immediately led to importations of finished Irons also, thus bringing in another element of competition. Labor followed suit, and advances have been made from time to time which, with the present outlook, will be very onerous if continued. The fact of the matter is, prices have been pushed up too rapidly, and unless markets abroad improve, values cannot be maintained on this side. It is unfortunate that the tenor of advices from Europe indicate that the maintenance of values there depends considerably upon American orders, as it is evident our markets are not at present in a condition to give them much aid. In making this statement it is not to be inferred that business is likely to fall off to any great extent, but the question of values is more especially involved. Sales have been at somewhat irregular prices, Gray Forge from $36.50 @ $39.50; No. 2 Foundry, $37 @ $39, and No. 1 Foundry at $39 @ $40. Bessemer Irons are again lower and offered at a decline of from $1 to $2 ℔ ton from last week's rates. English and Scotch Iron quiet, and concessions equal to the above would be made for lots to arrive.

Blooms.—The market is quiet, and orders can be placed at $105 for Cold-blast Charcoal; $85 @ $90 for run-out Anthracite, and $80 for Charcoal Ore Blooms.

Muck Bars.—The market is quiet, with sales at about $63. It is reported to-day that a sale of 1500 was made at that figure, but we cannot trace the transaction so as to confirm it.

Structural Iron.—There has been a heavier business during the past week, and orders to the extent of nearly 3000 tons have been placed. A large portion of the amount was for the Brooklyn Elevated Railway, the balance being for bridge and shipbuilding purposes. Prices are a little unsettled, in sympathy with the rest of the market, and it is thought that concessions of some importance were made in the transactions mentioned. For small lots prices are steady, and, as all the leading mills are full of work, it is not likely that quotations will vary from the following: Angles, 4¢ @ 4.1¢; Beams, Channels and Tees, 4.5¢ @ 4.6¢.

Plate and Tank Iron.—The market is quiet, and prices inclined to weakness. Some fair orders have been entered during the week, but, as a rule, concessions of two to three-tenths had to be made to secure the contract. Consumption continues large, and, as the mills are already fairly supplied with orders, there is reason to anticipate a steady business during the spring months. Reports of "cutting" are numerous, however, and, in view of the unsettled feeling in other departments, it is quite likely concessions will be granted in order to secure desirable orders. We continue last week's quotations, although they may be considered nominal, and probably something like $5 per ton higher than latest sales in quantity, viz.: Tank, 4.5¢; C. No. 1, 4.7¢; C. H. No. 1 Shell, 4.9¢; Flange, 6½¢; Flange Fire-Box, 7½¢; Best Bloom, 8¢.

Sheet Iron.—There is a quiet feeling in this department also, although it is probably in a better position at the moment than any other branch of the Iron trade. Stocks in manufacturers' hands are quite small, orders on their books are considerable, and the season in which the demand is most active is near at hand. No especial change need, therefore, be anticipated in this department, although it is likely that the best class of buyers could gain some advantage from the rates of last week. For small lots we quote :

Common Sheet, No. 25 to 28	7½¢
Common Sheet, No. 22 to 25	7¼¢
Common Sheet, No. 16 to 21	7 ¢
Best Refined ½¢ advance on the above.	
Best Bloom Sheets, No. 26 to 28	9¢
Best Bloom Sheets, No. 22 to 25	8¾¢
Best Bloom Sheets, No. 16 to 21	8½¢
Common Red Plates, 3-16 to 16	4.6¢
Blue Annealed, 3-16 to 16	4.7¢
Best Bloom Galvanized, discount	List price
Second quality, discount	10 %

Bar Iron.—Business has not improved during the week, and there is more anxiety to secure orders than we have seen for some time. The remarks under "Pig Iron" are equally applicable here, as manufacturers appear to have been entirely outgeneraled by the importers. Manufacturers took large orders at low prices, and placed themselves in a position in which, for a time, they had but little to sell, and then advanced their prices in a manner very satisfactory to those into whose hands the low-priced Iron had passed. Labor was also advanced in its full proportion to the change in quotations, and it seemed settled that 4¢ for Bars was to be a minimum price. Now that the mills are running short of work, however, they find it exceedingly difficult to obtain the rates quoted when they were not able to fill orders, and it seems as though a new basis of values will have to be found before business can go on in its usual course. What that will be it is impossible to say at present, but that it will be lower than now quoted seems certain. We hear of rumors of sales at prices below our quotations, and we are free to state that very little business can be done at 3.8¢. Consumption shows no falling off, and the demand will probably be heavy enough to keep all the mills fully employed, but to secure this, prices must be kept down to a point at which it will not pay to import foreign Iron.

Steel Rails.—The market is a shade easier, and orders can be placed at $82.50—possibly $80 in some quarters. The dullness is believed to be temporary, and due in some measure to the weakness in foreign markets. Prospects of heavy requirements were never better, so that there is no doubt that business will be more active at an early date, even if prices do not improve; $80 @ $85 may be regarded as extreme quotations, the latter for Western delivery. We hear of several thousand tons to be rolled from German Blooms offered at $83, at Pittsburgh; no sale reported, however.

Iron Rails.—Prices are off a little, especially on lots held in second hands, holders of which show increasing anxiety to unload. Sales of heavy sections reported at $66; but buyers are holding off, hoping to do better later on. There are a good many inquiries, and if prices were more settled, there is no doubt some nice orders would be given out. The market is feverish, and $65 @ $70, according to section, may be regarded as a fair average of the market.

Old Rails.—The market is unusually quiet, and sales all told, so far as we can learn, will not exceed 1500 tons for the week. Two lots of D. H. sold at $42.50, but T's are hard to move at over $41. Buyers would probably take hold in quantity at about $40, to arrive, but we have not heard of any sales closed below $40.75, and they are not offered very freely at less than $41.50. The following fairly indicates the position of the market at this date. An exchange says: So fickle have been the prices of Old Rails for a few months past that parties having Old Rails to sell write to the officials of rolling mills as follows: "What will you give for a few thousand tons of Old Rails, providing they are not sold before your answer is received?" The rolling mill official answers: "I will give $48 per ton if I don't change my mind before I hear from you."

Scrap Iron—Is in fair demand, but about $1 per ton lower. Cast, $29 @ $30; Wrought, $40 @ $41.

Nails—Steady and—unchanged.

PHILADELPHIA, March 10, 1880.

There has been a very active demand for Plate Iron to-day from shipbuilders, and two or three mills have entered orders for about 300 tons each. It is rumored that orders for several large Iron steamships have been given out, but we cannot obtain particulars in time for to-day's mail. There is no doubt, however, that the shipbuilders are rapidly filling up with work, and will require large amounts of Plate Iron.

The following circular explains itself :

PHILADELPHIA, March 9, 1880.

I beg to inform you that I have been appointed the exclusive Agent of the Union Mining Company, for the sale of their celebrated Mount Savage Fire Brick, for the States of Pennsylvania (east of the Allegheny Mountains and including Johnstown), New Jersey and Delaware. The high reputation justly accorded to the Mount Savage Fire Brick, for excellency of quality, for more than 30 odd years, requires no commendation from me. I shall be happy to anticipate your requirements and to furnish full information upon receipt of specifications and drawings, and remain, yours, very respectfully, EDWARD J. ETTING.

We also notice that Philip S. Justice has been appointed sole agent in the United States for the pure silica fire brick, made by the Landore Siemens Company. See advertisement on page 30.

PITTSBURGH.

(*By Telegraph.*)

PITTSBURGH, PA., March 10, 1880.

The Nail Manufacturers' Association held a meeting to-day and adjourned for one week without acting on prices. The roads in the West are in such a bad condition that it was thought best to defer action.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., March 9, 1880.

There has been no particular change in the general business situation during the past week. While trade generally is not as active as it was in January, it is much better than it has been at this season for several years, and with the advent of good weather and improved roads business in all the various departments will no doubt pick up again. The labor troubles and numerous strikes have had a depressing influence in some branches of business by unsettling confidence, but the indications are that there will be no further trouble from this cause for the present.

Pig Iron.—There has been little change in the situation since our last report, with the exception that the volume of business was smaller than during any week since the lull set in, aggregating about 300 tons. With scarcely anything doing, and an occasional lot offered for sale, the market, as might be expected, is weak, but, so far as we can learn, there is no disposition to make concessions on standard brands; undesirable and unknown brands might be bought at a reduction of $1 or more per ton, but the fact of the matter is, there is very little Iron to offer, as the furnaces in blast are nearly all sold ahead, and those out of blast cannot be started up until May or June for want of ore. As stated in our report of last week, some well-informed and observing operators are of the opinion that an improved demand is only a question of a little time; and while there are those who expect an improvement in prices when the present lull is broken, there are others who think values are as high as they are likely to go, although they do not expect any backward movement. Consumers for five weeks past have been drawing mainly on their stocks, having bought scarcely any during the time in question; and as the consumption is fully as large as it has been at any time since the "boom" was inaugurated, it follows that stocks in hands of consumers must be considerably reduced, and it is fair to infer, we think, that some of them will be in the market before long. Common Cold-short Irons appear to be weaker than any other kind, and may be quoted $3 @ $4 ₱ ton off, as compared with the higher point. Good Neutrals are held at $39 @ $40, 4 mos.; all-ore Red Short, $42 @ $43; and No. 1 Bessemer, $45; Cold Blast Charcoal Iron, $60 @ $65, the outside figure being demanded for Hecla.

Manufactured Iron.—While business is still a little slow, as compared with what it was prior to the lull which set in immediately after the last advance, the outlook is more encouraging, and it is confidently believed that, with some good weather and the roads improved so as to admit of wagon transportation in the country, the demand will soon pick up again. Already some manufacturers, both here and at Wheeling, report a decided improvement within the past week or two; that orders have commenced to come forward more fully, and that there is a firmer feeling being developed in regard to prices. The rumor given currency to by some of the papers here—that a reduction in the card was contemplated—has no foundation. The fact that the mills have been using up their cheap Pig Iron and will soon be obliged to replace at a much higher price, renders it pretty certain that full card rates will soon be exacted, and even now some makers are refusing to accept orders under a 4¢ base. Moreover, the enhanced cost of labor, coke, coal, &c., renders it much more likely that the market will stiffen rather than weaken.

Nails.—There has been no important change in the situation since our last report. We repeat former quotations, $5.25, 60 days, 2% off for cash, with the usual abatement of 10¢ per keg on orders for 200 kegs and upward. The regular monthly meeting of the Western Nail Association takes place here to-morrow. Wheeling stocks are reported very much reduced, and there has been very little "piling up" in Pittsburgh as yet.

Horse and Mule Shoes.—There is a moderately fair business, but no change in prices.

Railway Spikes—Remain unchanged at 4½¢, 30 days.

Wrought Iron Pipe.—Prices are easier, and we now quote at 35 to 40 % discount on Steam and Gas Pipe, with a fair business for the season. Boiler Tubes are held steady at 5 and 5 % off here, but it is rumored that 15 to 20 % off is being allowed away from here. Oil Well Casing and Tubing remain unchanged, 35¢, net, for the latter, and $1 for the former.

Steel.—There is a continued good demand. The consumption of all kinds of American Merchant Steel appears to be steadily increasing, owing largely to its cheapness. Prices firm, but unchanged.

Muck Bar.—The market continues very dull, and prices are weak and nominal at $60 @ $63 per ton, according to quality.

Rails.—There is nothing doing hereabouts in Steel Rails, which may be attributed to the fact that the mills, being sold several months ahead, are not in condition to accept any contracts except for fall delivery, while the demand is for spring and summer delivery. The last sale, a small one, was at $85, cash, at mill. In Old Iron Rails there have been no sales reported here for some time.

Scrap.—There has been nothing particularly new developed during the past week. Business continues rather slow, although about all that can be expected under existing circumstances, while prices remain unchanged. Old Car Wheels, $50 @ $53, gross; Machinery Metal, $32 @ $35, gross; Car Springs, $45 @ $48, net; Car Axles, $55 @ 57, net; ordinary No. 1 Wrought Scrap, $40 @ 42; Extra Selected do., $44 @ $45, net.

Window Glass.—The demand continues to increase as the season advances, and with very light stocks, none of our manufacturers having an assortment, prices continue strong, and even at the recent advance makers prefer small to large orders. While single strength is still quoted at 50 % off in car-load lots; 40 and 10 appears to be the ruling rate.

Coke.—There seems to be no abatement in the demand for Coke, notwithstanding the continued dullness in Pig Iron, and there is not, so far as we can learn, any weakening whatever in prices, which we continue to quote at $3.50 @ $4 ₱ ton, deliverable free on cars at ovens. It is said that contracts have been made for future delivery at $4.

Coal.—With continued good river navigation shipments are being made almost daily, and the consequence is that while the supply here in first hands is small, stocks in the down-river markets are large and increasing. The great proportion of the recent shipments go South. It is said that the river operators contemplate reducing the price of mining from 3½¢ to 3¢ per bushel, and if the attempt is made a strike will, no doubt, be inaugurated.

Petroleum.—The situation continues very unsatisfactory for the producer, with but little prospect, apparently, of any immediate improvement. The production continues large and increasing, as is also the visible supply, while the consumption is light, as it always is at this season of the year. As a natural consequence, prices are weak and drooping. Certificates sold as low yesterday as 86⅞.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, March 8, 1880.

The Iron market has been very quiet during the past week. Holders have not shown a disposition to concede, and buyers, especially consumers, have an idea that concessions must soon be made in order to sell. They are of opinion that a reaction from the highest rates has set in, and have been governing themselves accordingly. This state of affairs cannot last. Holders and consumers must soon come to an understanding or production of finished articles will seriously decline. The weather has been warm during the week, closing with a couple of days of dismal rain, with cool north and west winds. The streams are all full and boating business brisk.

Pig Iron.—The market is mostly nominal. Concessions from quotations would be necessary to sell any large lots of lower grades. Foundry continues fairly firm. We quote: Coke and Charcoal No. 1 Foundry, $38 @ $40; Gray Forge, $35 @ $37; White and Mottled, $28 @ $30; Car Wheel Metal, $42.50 @ $50.

Muck Bar, &c.—No Muck Bar in market. There is a small stock of Old Rails, all in possession of the mills. We quote them nominally as before. The high price of Scrap has had the effect to bring all the old Iron in the country into market with a rush. Hence the bottom has fallen out. Wrought is not worth above $25 @ $28 for No. 1, a fall of $10 @ $12; inferior do., $15 @ $20; Cast Scrap we quote at $15 @ $20, according to quality. There will no doubt be a sharp advance in these articles, the demoralization being brought about entirely by a glut, which will hardly be possible to repeat for months to come.

Ores.—The supply is full and the market steady; no change. We quote: Brown Hematite, 50 @ 56 % per ton, $2 @ $2.75 per ton; Red Fossil, $2 @ $2.25, on cars or on wharf from flat boats.

Nails—Hold their own. We quote at $5.25 rates, and a steady market.

Manufactured Iron.—The market for Bar is quiet, and in isolated instances concessions of a ¼¢ have been made, though the cut has not been general enough to justify lowering our figures. All other articles are firm. We quote Bars at $4 @ $4.25, and fairly firm; Railroad Spikes, $4.50; Track Bolts, $5.50; Trestle Bolts, $6; Fish Plates, $4.

Coal.—There is a very light business in Lump. We quote run of mine to manufacturers at $1.75 @ $2; Lump, $10¢ @ 12¢ per bushel, delivered.

Coke.—The supply of Coke is barely equal to the demand. Prices continue firm. We quote at $3 for Furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails—Steel Rails are nominal at $85. Iron Rails, heavy sections, $65 @ $70; small T for miners' use, $88 @ $90.

BOSTON.

MARCH 6.—The market continues devoid of animation, and there is naturally more or less uncertainty and a strong pressure for lower prices all along the line. But so far as *American Pig Iron* is concerned, makers appear to be utterly unconcerned, and there are few, if any, who are willing to quote less than $40 ₱ ton for No. 1 X Iron at the furnace to-day. Our quotations, therefore, are based rather upon sales from second hands than upon prices at which Iron can be bought from the furnacemen and delivered at tide-water. We quote American Pig Iron, f. o. b. at the shipping port, at $40 for No. 1 X, $39 for No. 2 X, and $38 @ $39 for Gray Forge. The arrivals of foreign Iron at this port the past week include: 200 tons per steamer Palestine, from Liverpool; 850 tons per ship St. Patrick, from Glasgow; 202 tons per steamer Iowa, from Liverpool, and 500 tons per steamer Waldensian, from Glasgow. Some local holders of *Scotch Pig* are as firm as ever, but sales are generally made on a basis of $33 for Eglinton, $34 for Gartsherrie, and $35 for Coltness. *Manufactured Iron* is in good demand, and the mill prices are generally firmly sustained. The competition of foreign Iron and the uncertainty in regard to the Pig Metal exert more or less pressure on the market, however, and dealers have sold ordinary Refined Iron at concessions from the manufacturers' quotations of 3¾¢. The same is true of other classes of Iron. The nail manufacturers are generally firm at the recent advance, but occasional sales are made from second hands at lower figures. Sales of 1000 kegs are reported at $5.10, the manufacturers' price being $5.30. *Copper* continues rather quiet, but values are very well sustained, and there is no stock available under 24¢, cash, and 24¾¢ for April and May delivery. Manufactures are unchanged, and we quote Copper Sheathing at 32¢; Braziers at 34¢; Bolts, 34¢; Bottoms, 37¢; American Yellow Metal Sheathing, 17¢ @ 18¢; Yellow Metal Bolts, 20¢; and English Yellow Metal Sheathing at 14¢, in bond. *Antimony* is in good demand, and we continue to quote 21¢ @ 23¢. *Lead* is in moderate demand at prices which show no material change. We quote large lots of Pig at 6¢. We continue to quote manufactured as follows: Lead Pipe, 7½¢; Tin-Lined Pipe, 15¢; Bar Lead, 7¢; Sheet Lead, 8¢; Block-Tin Pipe, 40¢. All these are subject to the usual trade or 10 % discount. *Spelter* shows very little change, and is generally held at 6¾¢ @ 7¢ for large lots. *Tin* continues dull and the market in favor of the buyer. We quote Straits at 22¼¢ @ 23¢ for large lots, Banca at 24¼¢, and English L. & J. at 22¼¢ @ 23¢.—*Commercial Bulletin.*

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of March 8, write as follows: The tone of the market has been, on the whole, better than was anticipated. The week opened quiet, and promised to be as dull as any of the preceding; but toward the close considerable inquiry developed, and consumers seemed to purchase more freely. We hear of concessions made on sales of round lots of soft Irons which come in competition with Scotch, but this seems to be the only class which has been at all pressing to sell. Hanging Rock Charcoal is well sustained, in view of small stocks and increased demand. Car-wheel Pig and Old Car Wheels are very firm, high grades of the former being difficult to obtain.

HOT-BLAST FOUNDRY.	4 mos.
Hanging Rock C. C., No. 1	$43.00 @ 44.00
" C. C., No. 2	41.00 @ 42.00
Southern C. C.	41.00 @ 42.00
" " No. 2	39.00 @ 40.00
Strong Coke	41.00 @ 42.00
" " No. 2	39.00 @ 40.00
Soft Stonecoal	36.00 @ 38.00
" " No. 2	34.00 @ 36.00
FORGE IRONS.	**4 mos.**
Charcoal Gray Forge	$41.00 @ 42.00
Strong Neutral Coke	39.00 @ 40.00
Cold-Short	35.00 @ 37.00
CAR WHEEL AND MALLEABLE.	**4 mos.**
Hanging Rock	60.00 @ 62.00
Southern	54.00 @ 57 00
Salisbury	65.00 @ .....
Old Car Wheels	53.00 @ 55.00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of March 6, write us as follows: The market is dull and lower in price. Furnaces generally are holding Iron firmly, but speculative lots are being offered at concessions, and the market is depressed accordingly. We revise quotations as below :

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$41.00 @ 42.00
No. 2 " "	40.00 @ 41.00
No. 1 Southern, Charcoal	39.00 @ 40.00
No. 2 " "	38.00 @ 39.00
No. 1 Hanging Rock, Stonecoal and Coke	39.00 @ 40.00
No. 2 Hanging Rock, Stonecoal and Coke	38.00 @ 39.00
No. 1 Southern, Stonecoal and Coke	39.00 @ 40.00
No. 2 " "	38.00 @ 39.00
"American Scotch"	38.00 @ 39.00
Silver Gray	36.00 @ 37.00
Scotch	38.00 @ 40.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neut'l.	38.00 @ 39 00
No. 1 Stonecoal and Coke, Cold-short and Neutral	37.00 @ 38.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	36.00 @ 37.00
No. 1 Missouri and Indiana Red-short	42.00 @ 44.00
White and Mottled, Cold-short and Neutral	33.00 @ 34.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	58.00 @ 62.00
Alabama and Georgia, Cold-blast	55.00 @ 58.00
Kentucky, Cold-blast	48.00 @ 55.00

W. B. BELKNAP & Co., Iron and Steel merchants, Nos. 113 and 115 West Main street, report to us as follows, under date of March 6: The lull mentioned in our last report has developed into a feeling of positive uneasiness, and prices for Bar are badly shaken. New York holders are offering English Bars at a price which, with freight added, would put them in this market at about the published mill rate. Mills which a few weeks since declined orders because booked a month ahead, are now soliciting. If speculators conclude that it is a good time to unload, the decline may be still further accelerated. It will have the good effect to remand trade to its legitimate channels, and to discourage outsiders from loading up for a rise. A lower price will go to stimulate consumption again, which has received a severe check from wild advances, and we shall see a steadier tone to the market. The country is undeniably prosperous and the consumptive demand large. The trouble has arisen from yielding too eagerly to the bull movement. That the 4¢ card was a mistake will be admitted on all hands, and the whole trade must now pay for the folly of a few. It is to be hoped that the price will go down and stay where it will discourage importations. While every port is being filled up with foreign Iron, it is useless to declare that there can be no surplus.

ST. LOUIS.

Messrs. CARD & HOFFER, Pig Iron and Iron Ore Merchants, 417 Pine street, write as follows, under date of March 6: There has been no material change in either prices of Pig Iron or condition of market. We quote :

HOT BLAST CHARCOAL.	
Missouri	$48.00 @ 50.00
Southern	42.00 @ 43.00
Hanging Rock	45.00 @ 47.00
COKE AND COAL.	
Missouri	None offering
Southern	40.00 @ 42.00
Ohio	40.00 @ 42.00
MILL IRONS.	
Cold-short	36.00 @ 39.00
Red-short	..... @ 45.00
CAR WHEEL IRONS.	
Missouri	55.00 @ 60.00
Southern	55.00 @ 57.00
Ohio	60.00 @ 65.00
IRON ORE.	
Ore for fix	12.00 @ 15.00
For furnace	8.00 @ 10.00

Brown Hematite—no market for them here.

BALTIMORE.

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows under date of March 8: The Iron market for the past week has been quiet. The demand for good grades of Iron keeps fully up to the supply, while inferior or not well-known brands are neglected. We quote prices about as follows :

Baltimore Charcoal Wheel Iron	$58.00 @ 60.00
Virginia "	50.00 @ 60.00
Anthracite No. 1	40.00 @ 42.00
" No. 2	39.00 @ 41.00
" No. 3	36.00 @ 39.00
" Mottled and White	36.00 @ 37.00
Charcoal C. B. Blooms	95.00 @ 100.00
" " Billets	95.00 @ 105.00
Refined Blooms	85.00 @ 90.00

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of March 8: Business for the past week has ruled somewhat more quiet, with stocks being more freely offered at shaded figures. Other than this there has been no change.

Ref. Bar Iron, 1 to 6 by ¾ to 1	₱ lb 3 8-10 @ 4¢
" " 1 to 4½ by 1½ to 2	₱ lb 3 8-10 @ 4¢
" ¾ to 2, Round and Square	₱ lb 3 8-10 @ 4¢
Hoop Iron, 1½ wide and upward	₱ lb 4¼ @ 5 ¢
Band Iron, from 1¼ to 4 in. wide	" 4½ @ 4¼¢
Horse-shoe Iron	" 4¾ @ 5 ¢
Norway Nail Rods	" 6¼ @ 6½¢
Black Diamond Cast Steel	" 13½ @ 14½¢
Machinery Steel	" 9 @ 9½¢
Cast Spring Steel	" 8 @ 8½¢
Common Horse Nails	" 10 @ 14 ¢
Perkins' Horse shoes, ₱ keg of 100 lbs	$ .....
" Mule shoes	10 9 8 7 6
Putnam Horse Nails ₱ lb	21 22 23 24 26¢
Globe Horse Nails ₱ lb	20 21 22 23 25¢
Railroad Spikes	4½ @ 4¼¢

Less list discount to the trade.

NEW ORLEANS.

Messrs. MINNIGERODE & BERL, dealers in Railway Supplies, 61 St. Charles street, write as follows, under date of March 5: Our market has continued practically stationary for the past week. The wharves show unusual activity, large importations of foreign Iron having been received. The arrivals of Scotch Pig, especially, appear to have come with a rush, and are, as a rule, the purchases of six weeks to two months ago. As far as we can learn, the bulk of these importations is already placed; but we know of several large consignments, both of Pig and Old Rails, going into bond, which indicates that holders look for better prices than can now be obtained. It costs $1.50 @ $2 ₱ ton to store such consignments in bond, if only for a month. This is owing to the fact that the past long period of depression, during which all importation of metals ceased, rendered the bonded warehouses very unprofitable properties, and the few warehouses now remaining bonded are, for the most part, distant from the wharves, necessitating two drayages when cargoes are put into and taken out of bond. The market for Finished Iron shows no decline, though consumers appear to be buying meagerly. The country demand for supplies is fair, and may be considered as good for this season. The importations of English Bars for the past two weeks have amounted to 8000 lbs. In the matter of Rails, we hear of a sale of 4000 tons English 56s at $82, ex ship Galveston. We also have to report a sale of 700 tons English 35s at $66, f. o. b. New Orleans. Old Rails are weaker, and are offered at $42 @ $43 for future delivery. Wrought Scrap has declined somewhat, in sympathy with Old Rails, though holders are firm in their views. A brisk demand for all railroad material is anticipated in this State and Texas during the coming season. The general prosperity of the country is nowhere more apparent than in this section, where fine crops of cotton and sugar at remunerative prices have given a buoyancy and activity to business not known for years.

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of March 8: Business is chiefly done on small orders. Large manufacturers are off the market. The market is fairly represented by the following quotations :

Scotch Pig Iron	35.00 @ 38.00
American Scotch Pig Iron	42.00 @ 45.00
American No. 1	39.00 @ 43.00
" No. 2	38.00 @ 41.00
" No. 3	37.00 @ 39.00
Mottled and White	35.00 @ 37.00
Cold-blast Charcoal	..... @ .....
Warm-blast Charcoal	43.00 @ 46.00
Old Rails	40.00 @ 41.00
Wrought Scrap No. 1	36.00 @ 38 00
Cast Scrap Machinery	28.00 @ 30.00
Richmond Refined Bar Iron, Stand'd.	6.04 @ ....
Horse Shoes, Tredegar	..... @ 5.50
Mule " "	..... @ 6.50
Old Dominion Nails, (standard size) according to size of lots.	5.30 @ 5.40

Freights to New York, $2.00 for 2240 lbs. by sail.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

LONDON, ENG., Feb. 23, 1880.

THE TRADE OUTLOOK.

at the moment is in some respects scarcely so bright or so hopeful as it has been of late, although it cannot be said that in any leading particular there has been a quotable retrogression. There is, however, in many quarters a return of that pessimism which disappeared but a short time ago, and which had been lost sight of in the interval. Those who had been borne down by the weight of favorable evidence are again prophesying all sorts of evil, and are, if anything, disposed to be more rampant than ever in their denunciation of the doings of the past few months. I am not at all sure that their warnings are justified by existing facts or immediate future prospects, and I am still less confident that their Cassandra-like croakings will be heeded. There may be some little justification for the view that the iron trade is just now making little or no progress, but at the same time it is not undergoing any real relapse. As I have stated in these pages on former occasions, the open market is scarcely to be accepted as the sure and infallible index of the actual state of trade. At the present time open transactions are extremely irregular. Some of the manufacturers and merchants are displaying a willingness to sell lots of crude and finished iron at prices which as many others declare themselves utterly unable and unwilling to accept. Buyers, too, are similarly void of unanimity. Some of them

are withholding their specifications under the avowed impression that prices will shortly fall, while others display an equally strong desire to place their orders on the best terms at present obtainable, lest they should be caught by another rise in prices. In this way matters are largely stationary, neither producers nor dealers being willing to make concessions of any importance, and neither side being in a position to enforce their views. That being the case, it is clearly difficult for any one to forecast the probabilities of the trade just ahead. One man may fairly claim to see as far into a brick wall as another, however, and I shall therefore venture to hazard the supposition that, whatever may be the fluctuations during the remaining portion of this quarter, we shall begin the second quarter of the year in a stronger and more sanguine manner than has hitherto been evinced. In putting forward this opinion I do so with some diffidence, and with a due sense of all the circumstances and surroundings of the case. I believe events will justify the idea, nevertheless, because a careful survey of the situation convinces me that almost all the outside markets are gradually experiencing the effects of the trade revival which was first seen in the United States and then in Great Britain. We may take it for granted, I presume, that your competition with us in this and most other foreign markets is likely to be on an extremely limited scale for some time to come, even if you do not aid us further by buying our manufactures for your own use on a more or less considerable scale. On the Continent of Europe the course of commercial events is plainly and unmistakably running in our favor. All our iron-making competitors are actively engaged, many of them, indeed, having already more commissions on hand than they are likely to get through prior to midsummer. This is the tenor of our advices from France, Belgium, Luxembourg, Germany and Austria. Admitting the bulk of these statements (which do not reach us from one or two isolated or prejudiced sources, but universally and beyond question) it follows, as a matter of indubitable certainty, that our active competitors are all well employed. They are, in fact, so busy in many instances that their prices at their own works are higher than our own. Following out this train of reasoning, the query naturally arises as to the whereabouts and nature of the competition we are likely to meet with for the additional wants of the world during the next few months. The producing powers of our competitors are everywhere and in all respects immeasurably less than our own (I leave your makers out of this comparison), and such as they are, those capacities are even now said to be taxed almost to the utmost. Our manufacturing capabilities are not by any means overstrained. We are busy, but we have a tremendous reserve, upon which we have not yet drawn. The inference, then, is that we and we alone are able and willing to meet the new demand as it may arise—up to midsummer at all events. So long as our prices are lower than, or even level with, those of the Continent, it is certain that we shall receive the surplusage of orders which they cannot accept. Will that overflow take place? Personally, I think it will. Our foreign and colonial advices are improveing every mail, especially from South Africa, New Zealand and Australia. I myself have seen inquiries from Belgium during the past week for very large lots of cannon and hematite pigs, ferromanganese, merchant iron, and rolling Bessemer sheets, wire, and plates. If Belgium has to come here for those goods it is pretty clear that the home manufacturers are unable to supply on favorable terms. Germany is rapidly rising to the level of our prices, all the iron and steel works being full of orders from America and their own consumers. The French works are everywhere active, and every day witnesses advances in makers' prices. Putting all these things and their collaterals together, I have arrived at the inference mentioned above, and I await what the French term the "development of events" to prove or disprove the idea. I freely admit that our own market has about it many elements of weakness, some of which can scarcely be eradicated or alleviated for several months to come, but I am still of the same opinion, my impression being that what we may lack at home will be more than supplied from without, always provided your market maintains the good status which has marked it thus far in the present year. Any notable falling off on your side would, without doubt, be immediately felt here and on the Continent in an unfavorable sense, while any material reduction of your tariff would be equally certain to affect us in the opposite direction. Speaking of tariff matters reminds me that the progress of the steel rail measure before your Ways and Means Committee is being watched with deep concern by everybody interested in our Bessemer trades. There are, I dare say, few who venture to hope that the bill will emerge from the House in such a shape as to afford any sensible relief to our manufacturers, but there is a warmly-expressed hope and expectation that the reports of the discussions will do much to "open the eyes" of your general public to the inequalities and (*anglice*) "iniquities" of the existing tariff, and so pave the way for broader and more sweeping measures of reform in the future. Our latest intelligence as to the rail duties is that the committee is likely to recommend a reduction from $28 to $20 per ton, but the Washington cablegram which gives this intimation does not afford any information as to the likelihood or otherwise of the proposal being carried. We are also curious as to the other tariff "suggestions" affecting iron ore, pig iron, &c., but, speaking generally, very few persons suppose that much will be done in the way of free-trade legislation by your present House of Representatives. The result, therefore, will, in any eventuality, be accepted as an agreeable surprise."

SCOTCH PIG IRON

has undergone a variety of changes in both directions during the week, but, on the whole, a large amount of business has been done, buyers being evidently under the impression that, as compared with Cleveland and other brands, Scotch pigs are not unduly dear at their present figures. That is stated to be the view of many shrewd men who are purchasing for an early rise, in spite of the not very favorable current advices from your market. The output has not been further enlarged since my last letter, 111 furnaces being still the number in operation. The stock in Connal's stores, however, has increased to 443,536 tons, an addition of 2594 tons during the week. Shipments are relatively small, but they are heavier than at the corresponding date of last year. The total increase to date has been 31,627 tons. Ballast pig has gone up 57/6 and 60/ per ton, according to John E. Swan & Bros. (Limited), whose circular also shows that the imports from Middlesboro' into Scotland have been comparatively augmented to the extent of 14,703 tons. Writing from Glasgow, on Feb. 20, James Watson & Co. said: "Since the date of our last there has been considerable fluctuation in the price of Scotch warrants, with a large speculative business transacted. On Monday the price varied between 70/10½ and 69/, closing at 69/6 per ton. On Tuesday the price fluctuated between 69/9, 70/4½ and 69/3, cash, while on Wednesday the market was flat, with business from 69/4½ to 68/4½ per ton. Yesterday the price further receded from 68/ to 67/4½ per ton, closing at 67/9, cash, and to-day the market opened weak, with transactions from 67/3 to 66/10½ per ton, afterward steadily improving to 67/9 per ton, at which it closes rather sellers. The demand for shipping brands has been quieter this week, with a relapse in prices. The shipments last week were 10,617 tons, as compared with 7272 tons for the corresponding week of 1879." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	71/6	66/6
Gartsherrie, "	80/	70/
Coltness, "	82/6	72/
Summerlee, "	81/	68/
Langloan, "	80/	69/
Carnbroe, "	80/	68/
Calder, at Port Dundas	80/	68/
Glengarnock, at Ardrossan	80/	68/6
Eglinton, "	74/6	66/6
Dalmellington, "	74/6	66/6
Shotts at Leith	80/	71/6

CLEVELAND PIG IRON

is exceptionally steady in all respects, in contradistinction to the vacillation and uncertainty which characterizes the Scotch market. The production is still seen to be under rather than over the consumptive demand, and there are evidences that the latter is likely to increase rather than diminish. Shipments from Mindlesboro' have latterly averaged over 2600 tons daily of pig iron and above 600 tons of manufactured iron. To the United States a few new shipments of pig iron are being made, but the heavy freights, 17/6 to 20/ per ton, are against the promotion of the trade on a large scale. Probably the shipments will be made indirectly, as London freights to United States ports can be had at from 9/6 to 11/ per ton, sail or steam. Current quotations for G. M. B., Cleveland pigs, delivered f. o. b. at makers' wharves in the Tees are as follows, net cash:

No. 1 Foundry	70/	No. 4 Forge	64/
2 "	66/	Mottled	64/
3 "	63/	White	63/
4 "	62/6	Kentledge	67/6

All net cash, delivered f. o. b. at makers' wharves in the Tees.

The common bars of the locality are £8 @ £8. 10/; angles, £8. 10/ @ £8. 15/, and plates, £9. 10/ per ton.

THE WIRE TRADE

seems to be one of the most properous of our industries at the present time. The manufacture of the various kinds of this useful article is, as you may be aware, principally located at and near Warrington, Manchester, Sheffield in Shropshire, and at Birmingham, the leading makers being Rylands Bros., Richard Johnson & Nephew, the Whitecross Wire Co., the Hope Iron and Wire Co., the Warrington Wire Co. (all in or near Warrington), Rollason & Co., Cornforth & Co., Edelsten & Williams, Jenkins & Co., Horsfall & Sons (all of near Birmingham), Charles Cammell & Co., Mackinder & Co., W. Cooke & Co., Firth & Sons, Jessop & Sons, and others, at Sheffield; Cookes & Swinnerton, and the Barrow Co, at Barrow, and various concerns in Shropshire. For some years past, the competition of the German manufacturers had been extremely severe; indeed, in certain gauges the home producers had virtually ceased to offer anything like a vertebrate competition, and the Westphalian makers had matters pretty much their own way. Even in Birmingham itself, where there is a good deal of wireworking done, the foreign wire met with a large consumption, and it could not be denied that its quality for most ordinary purposes was as good as was necessary. Toward the end of last year a change begun to be apparent. The invading foreigner was observed to be unable to hold his own and to hesitate. The English manufacturers advanced their prices twice over, yet they still maintained their position, and it was presently ascertained that the importers of the Continental wire could neither obtain present supplies nor promise early deliveries. The situation is still much the same, and the English makers are "masters of the ditch." The leading houses again advanced their prices last week—iron and steel wire by 30/ per ton, and fencing wire and staples 20/ per ton. The new rates of Rylands Bros. make B B drawn fencing, £6 @ £10; W G, £13. 5/ @ £19; rolled ditto plain, £11. 10/ @ £12. 10/; or galvanized, £14. 15/ @ £15. 15/; B B drawn galvanized telegraph wire, £18. 10/ @ £22. 10/. Other sorts in proportion.

AT SHEFFIELD

the heavy branches are in a most satisfactory condition, as is clearly evinced by the circumstance that every department of the great Atlas Works of John Brown & Co., Limited, is now in operation, although there is not as yet sufficient surplus work to justify the restarting of the branch establishment at Swinton, where tires were the chief product in former times. In armor, tires, axles, buffers, wire and plates the outlook is now very heavy, both at the Atlas and the Cyclops Works of Charles Cammell & Co. All the local rail mills are busy, especially those of Cammells, Samuel Fox & Co., Steel, Tozer & Hampton and Wilson & Cammell's. Of bar, plate and hoop iron the district is producing a large quantity—prominently so at the Parkgate, Midland and Northfield works. At one establishment a strike of molders has been in existence for several weeks (without any notice of the fact appearing in the local newspaper), the consequence being that the firm have had to *refuse orders*. These men had never been very badly off, but no sooner had the revival set in than they struck for a rise of 20 per cent. In the crucible-steel branches there is a considerable amount of work in hand. William Jessop & Sons are about to reopen their old works in the Park, which at one time used to be their headquarters. Firth & Sons, Francis Hobsons, Wardlass and other well-known houses are also busier on American orders. For good cutlery there is a steady call in a general sense, while a few firms, who need not be specified in detail here, are sending very large lots across to your market. Electro-plate is somewhat quiet, although two or three leading concerns have heavy orders on hand. In files, saws and edge tools the inquiry is decidedly better.

FROM BIRMINGHAM

it is reported that the lull which has made itself apparent in the demand for heavy goods and their near allies is to some extent being counterbalanced by greater activity in the lighter branches of the hardware trades, such as brass founding, buttons, tinplates, toys and the like. The extra business in these latter branches arises in a great measure from the renewed prosperity of the North of England and Scotland, aided by the opening of the London season. The foreign and colonial demand is also on an enlarged scale, almost all our recent advices from the East of Europe, the West Indies, South America, the Cape, Natal and the Australian colonies being hopeful in tone, with good orders. Trade with Ireland is necessarily dull and must remain so while the west of that country is in its present deplorably distressed condition.

BESSEMER AND RAIL PRODUCTION.

In a recent issue I gave a list of the Bessemer and rail works of Great Britain, together with some particulars of their capacities and probable production during the present year. That list was practically accurate, although it is quite possible that some of the estimated figures were more or less inaccurate. I have since received details of the principal Bessemer works on the Continent of Europe, and now append them. In Germany proper there are 19 such establishments with 78 converters, of which Krupp at Essen possesses 18. The works are:

PRUSSIA.	Converters.
Kœnigshütte, Upper Silesia	4
Osnabrück	4
Hermannshütte, Hœrde	5
Hösch, Dortmund	2
Union, Dortmund and Hatlingen	4
Bochum, Westphalia	7
New Bochum, Westphalia	2
Krupp, Essen	18
Gute Hoffnungshütte, Oberhausen	4
Phœnix, Ruhrort	2
Rheinische, Meiderich	2
Pönsgen and Gieschers, Düsseldorf	2
Rothe Erde, Aix-la-Chapelle	2
Steinhauser Hütte, Witten	2
SAXONY.	
Kœnigin Marienhütte, Zwickau	4
BAVARIA.	
Maxhütte, Regensburg	2
Gienanth Bros, Kaiserslautern	2
ELSASS-LOTHRINGEN.	
Dietrich & Co., Niederbronn	2
De Wendel & Co., Hayange	2
Total	78

The yearly make of Bessemer pig in the empire reaches 150,000 tons, but the production of steel rails alone is over 250,000 tons, the difference being made up by the importation of ores and pigs from Spain, France, England, &c. The make of iron rails ranges from 230,000 to 240,000 tons per annum. In France there are only 23 steel manufacturing establishments, some of these being devoted to Siemens and the cementation processes of the leading works.

	Converters.
Schneider & Co., Creusot	6
Terre Noire Co	4
Petin & Gaudet, Givers	4

Of the remaining works particulars are wanting, but it is stated that last year the total output of Bessemer and Siemens steel in France was about 230,000 tons. In Austro-Hungary there are 13 Bessemer works, with 32 converters in all, viz.:

	Converters.
Teplitz, Bohemia	2
Kladno, Bohemia	2
Witkowitz, Moravia	3
Teschen, Silesia	2
Ternitz, Lower Austria	6
Turrach, Styria	3
Neuberg, Styria	2
Graz (Southern Raily)	2
Zeltweg	2
Graz (State Raily)	2
Heft, Carinthia	2
Prevali, Carinthia	2
Reschitza, Hungary	2

There are about 20 rail mills in this empire, producing about 80,000 tons of steel rails and 20,000 tons of iron rails annually.

The Bessemer resources of Russia are ill-defined. At the Aboukoffsky Works there is a 5-ton converter; at the Perm Works 1 converter exists, and at the Nijni-Salda Works 2 converters of 5 tons each are at work. The aggregate output is unknown.

In Belgium there are two Bessemer establishments, the John Cockerill Works at Seraing, with 8 converters, and the Angleur Works with 4 converters. The production is about 75,000 tons yearly, the steel rails made in 1878 reaching 65,000 tons. If worked up to their full capacity the production might reach as high as 120,000 tons.

In Sweden there are 19 Bessemer works making about 20,000 tons yearly, the smallness of the output being explained by the fact that the converters are almost universally fixed, added to which the make is restricted by the scarcity of the fuel used, charcoal.

Of Spain, Norway, &c., nothing need be said, but these data (for some of which I am indebted to Mr. Jeans' work on "Steel") with those previously furnished, should enable you to form some idea of the rail making capacities of the principal countries.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, Feb. 22, 1880.—*Metals.*—Business in general has continued to improve, favored by finer weather. Metals have, for the most part, however, been dull and weak. *Copper* has remained drooping here. We quote Chili Bars, 187.50 francs the 100 kilos.; Common ditto, 185; Ingots and Slabs, 195; Best Selected, 197.50, and pure Corocoro Ore, 187.50. At Marseilles, Copper has also declined, but recovered a little toward the close. They quote Spanish in slabs, 165; Red Tokat, 170; small Refined Ingots, 187.50; Sheathing, 202.50; Bolts, 210, and Yellow Metal Sheathing, 190. *Tin* is still tending downward here; we quote English, 262.50, and and all other sorts, 257.50. There is much weakness too at Marseilles, where they quote Banca and English, 265, and Straits and Billiton, 260. *Lead* is firm here at 48 for Spanish and English, and 48.50 for other sorts. Marseilles also shows considerable strength at 44.50 to 46 for Soft, and 51 @ 52 for Manufactured. *Spelter.*—This metal evinces increased firmness everywhere. We quote the same 56 here, and Sheet Zinc, 70. At Marseilles, Sheet Zinc is worth 65 @ 67.50, and Old Spelter, in slabs, 40 @ 44. *Iron.*—The Iron markets in France are as firm as ever. The price of 24 francs for Merchant Iron and 25 for special is maintained. The nail makers have had a meeting at Paris a couple of days ago, a general advance of 15 % having been resolved upon on the occasion. In the Haute-Marne the forges have a heap of business upon them, but fresh commands do not arrive very freely. They quote Coke Iron 240 @ 250, and mixed No. 20, 260 @ 270. We had announced as impending an advance of 20 francs on Axles; the producers of common Axles in the rough have already raised them from 250 @ 270 francs. In the Ardennes the improvement has not been interrupted since January 1. Merchant there has, from 18 francs on December 27, risen to 24 at present, but for the competition from the Northern department it would be 25 instead. Heavy hardware has risen 25 @ 30 % in two months. In the Meurthe and Moselle Affinage Pig is in good request at about 115 francs per ton. The Longwy Iron Company quotes: No. 1, 125; No. 2, 120; No. 3, 115; No. 4, 113, and No. 5, 112. In the Northern department and the Pas-de-Calais the improvement is making some progress, and is coming forward with additional strength. Common Merchant Iron is quoted in those localities 240 francs the ton. The Rolling Stock Company has caused to be built at St. Ouen a large shop for the construction of the many cars the company have engaged to deliver. The owners of the forges of the Sambre, Moutataire, St. Irene and Viveux districts met at Valenciennes for the purpose of endorsing the quotation of 24 francs for Merchant Iron previously fixed by various works. *Coal.*—There has been but little, if any, change in the aspect of the Coal markets in this country, the obstacles to transportation not yet having been wholly overcome. At the North and in the Pas-de-Calais prices remain firm, orders arriving with great regularity. At St. Etienne the holidays have caused some falling off in the quantities dispatched; the situation there, however, remains favorable to holders.

BELGIUM.

(*Revue Universelle.*)

BRUSSELS, Feb. 22, 1880.—*Iron.*—No further advance can be reported from here, but the Belgian markets remain as firm as heretofore. The demand for Iron for building purposes is on the increase. Accounts from neighboring countries assist materially in lending strength to the situation here, and Scotch and English Pig Iron remaining firm, Luxembourg and Longwy sell their stock with ease under heavy engagements. In Luxembourg the Rumelange Iron Company has been started again and will have its first blast furnace blown in by August or September. In Lorraine an effort is being made to revive the Mazieres furnaces, which have been idle ever since they were built. In Belgium a great many furnaces will be blown in gradually, but it takes some time ere they are all in operation once more, and in the meantime Ironmasters find no difficulty in upholding the price of 10.50 francs for good Affinage Pig, both at Liege and Charleroi. Athus quotes 10 francs; at the furnaces Moulage Pig is held at 10.50 for No. 5 at Charleroi, and at 10 francs at Athus. Old Rails are quoted 150 francs at the works; Merchant Iron, 21.50, No. 1 basis; Iron Rails, 22 @ 23; Beams, 22; Steel Rails are obtainable at 260. *Coal.*—There is no important change at Charleroi, where Coal for industrial purposes sells at 10 @ 14 francs, according to quality. At Mons the price of 15 francs is readily paid, 28 @ 30 for ordinary Coke, and 35 for Washed.

GERMANY.

(*Borsenhalle.*)

HAMBURG, Feb. 22, 1880.—*Metals.*—The *Iron* situation remains a strong one. At Dortmund the Iron and Steel works are as busy as ever; most of them have got orders far into the latter half of the year, and some have sold ahead their entire production to the close of 1880. Pig Iron, in spite of the continual blowing in of fresh furnaces, remains very much wanted. A pleasing sign is, furthermore, the increased work at the steam boiler and machine shops. There is great pressure for speedy delivery there, and hardly space left in the shops to finish the goods nearly ready for delivery. The foundries have also got their share of work. Hollow-ware manufacturers have increased their price list 2 marks the 100 kilos, and enamelled ditto, 4 marks. Rolling mills and steel works have raised theirs 5 marks, and small hardware manufacturers 20 @ 25 %. Bessemer Steel Rails have been advanced 10 marks the 100 kilos. Pig and Merchant Iron are stationary for the moment, but firm. Small manufacturers, locksmiths, retail hardware dealers, &c., do not yet report any appreciable revival, but this will come with the general rise in wages. Thus far the entire revival, coming from abroad, has had its effect on the leading industrial establishments mainly; by degrees it will penetrate into the humbler channels. The prospect of higher Iron duties in Russia is much deplored in this country. *Copper.*—We have remained dull but steady here on the basis of 80 marks the 50 kilos for Dronthcim Berlin is unaltered. *Tin.*—There has been great irregularity here, with a better feeling toward the close, but closing quietly. The range is now 100 @ 104 marks. *Lead* is firm at 19.50 @ 21.50 marks here for Pig, and 21.60 @ 21.80 English Sheet and Pipe. *Spelter.*—We remain firm at 21, spot and to arrive. At Beslau, Common has risen from 20.35 @ 20.70.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, Feb. 19, 1880.—*Tin.*—This metal is still declining. There are no buyers, and prices cannot be upheld any longer. The consequence has been quite a break down from 57 guilders the 50 kilos. to 55.25 @ 55.50 for both Banca and Billiton. Consumers confine their purchases to a minimum.

AUSTRIA.

(*Austrian Trade Journal.*)

VIENNA, Feb. 22, 1880.—There has sprung up, all of a sudden, quite a demand for Iron from the machine shops and other works. The railroads have also given large orders for material. The machinery demand is likely to remain steady for some time to come. Locomotives, tenders and cars have been largely ordered for the Northern, Western and Aussig-Teplitz railroads. The Austrian locomotive works are now also executing orders for the Hungarian government lines. The Austrian Lloyd Steamship Company are building Iron steamers at Trieste, and order Iron and Steel sheets. Iron has not advanced any further in the meantime, but the rolling mills will soon raise their rates. Manufacturers of axles have raised their prices 1.50 florins; the previous advance, which still took place in the old year, was 2 florins. The directors of the Southern Italian Railroad, at Florence, stand in need, for their line, of 12,500 tons Bessemer Rails, tenders to be made to them forthwith, deliverable late in the fall of 1880 and in 1881. The Upper Italian line will want 8000. They have both requested the Styrian-Carinthian rail mills to hand in their tenders. The Inneberg Company are reported as having made a magnificent sale of White Pig Iron, 3000 tons, at 60 florins per ton over the late combination figure. *Coal.*—The Italian railroads are buying Coal extensively in Austria. The Upper Italian line alone has just taken 30,000 tons.

AUSTRALIA.

(*Launceston Examiner*).

LAUNCESTON, TASMANIA, Dec. 12, 1879.—*Tin.*—On the Northeast the alluvial Tin claims are being energetically worked, and during last month 280 tons of Ore have been received here from that district. As a result of the increase in the price of Tin several of the claims have been enabled to declare dividends. The Trone River Co. have declared two dividends of 1/ and 1/6 each respectively during the month, while the Pearce and Ruby Flat Co. declared a second dividend of 5/ per share. From the Mount Bischoff Co.'s mine 167 tons have been received and 12 tons from the Don Co. in the same district. The former company recently declared a dividend of 10/ per share. This makes the 14th dividend declared by this company, who have now paid £7. 10/ per share, making a total of £30,000 in dividends. The yield of Tin ore from this district is likely to be very much increased in a short time, as the North Bischoff Valley Co. have completed the erection of their crushing and dressing machinery, and as there are several well defined lodes on their property, the battery should be kept constantly crushing.

EAST INDIES.

(*Rantenberg, Schmidt & Co.*)

SINGAPORE, Jan. 20, 1880.—*Tin.*—A most extensive business has been transacted, the price rising to $31 per picul, at which figure it closes without any available supply left. In exchange a good business has been done at 3/10⅜ @ 3/10¾ for six months' private bills on London, the outside rate being the closing one, and 3/10 for four months' bank bills.

(*Gilfillan, Wood & Co.*)

SINGAPORE, Jan. 28, 1880.—*Tin* opened firm, and moderate purchases were made for the United States at $31.50 ₱ picul, since when the demand has flattened down, and $31.25 ₱ picul was accepted yesterday for 20 tons, and to-day $31 ₱ picul is a full price. At these prices there is no demand for England. The shipments to the United States continue large, and we estimate that the shipments from the Straits this month will not be under 1400 tons. *Freights.*—The supply of tonnage has been more abundant and the rates are lower. Berth rates to London are now quoted 40/ for dead weight. For New York the Jona has taken the berth at 40/. There is some dead weight offering. The Hiram Emery has cleared for New York without any Tin on board. The Mohican, for Boston, took 840 piculs; the Merionetshire, *via* London, took for New York 420 piculs; and the Kaisar J. Hind, same destination, 3185 piculs. The Game Cock has not yet arrived. The S. D. Carleton, now on the way from Hong Kong, has been chartered on secret terms. The Benjamin Sewall put into Batavia and it was thought she would have to dock and repair, but the latest news is that she has proceeded on her voyage. *Exchange* is steady at 3/10⅜ for six months' sight credit drafts on London.

(*Aitken, Spence & Co.*)

COLOMBO, CEYLON, Feb. 3, 1880.—*Plumbago.*—Shipments from Colombo and Galle to all quarters from Oct. 1, 1879 to Jan. 27, 1880, have been 48,634 cwts., against 24,185 in 1878–79; 17,338 in 1877–78, and 38,686 in 1876–77; of these from Colombo and Galle to the United States, from Oct 1, 1879, to Jan. 30, 1880: 47,132 cwts., against 15,519 the previous year.

CHILI.

(*Ferrocarril.*)

VALPARAISO, Jan. 16, 1880.—*Copper.*—Production has been making good headway; prices have fluctuated a great deal since Dec. 22, but freights have been steadily improving. The sales effected since have been: Dec. 27 to Dec. 31, 1468 quintals at $16.60 @ $17 per quintal; Jan. 3, 600 at $17, all on shore her; Jan. 7, 2200 on board at $17.70; Jan. 9–13, 1500 at $17 on shore; 2207 on shore at $17.40; 2423 at Coquimbo at $17.60 @ $18, and 245 at $17.55 on shore here, and 4407 at $19 at Chanaral, together with 1200 quintals regulus at $7.40 on board here. *Exchange* on London, 60 days sight, 36½d.; 90 days, 36⅝d.

RUSSIA.

(*Neue Zeit.*)

ST. PETERSBURG, Feb. 17, 1880.—*Iron.*—The revision of the Iron tariff involves, among others, the following articles: Tools and Machinery for manufactories and agriculturists will in future pay 1 rouble per pound, instead of 50 and 75 kopells at present, should the Council of State adopt the report of the committee entrusted with the drawing up of this project of a law; the same relates to parts of Machinery hitherto paying 30 kopeks per poud, also to be raised to 1 rouble. On the other hand, the duty on Locks is to be lowered, while for heavy hardware the present duty of 1 rouble per poud is to be maintained. Russia imports from Germany annually about 3,000,000 poud of the goods to be raised, and the change will therefore, should it pass, to some extent affect exportation of them into Russia. It is proposed to let Pig Iron enter Russia duty free in the future.

The corps of engineers left at Panama by M. de Lesseps have been until lately occupied in completing some office work pertaining to the canal. On Feb. 24, work in the field, as recommended by M. de Lesseps, was resumed under the direction of Mr. P. J. Sosa, of Panama, chief of the corps, and is as follows: To make new levels of the line of railroad to serve as a basis for the execution of the work, and to complete everything relating to its topography; to continue the series of borings already commenced, and to make others wherever they may be considered necessary; to continue the series of observations on the tides; to make transverse profiles, and, as far as time will permit, to take the longitudinal profile of the corrected line for the canal. The present labors have no other purpose than to revise the preliminary surveys, with a view of reducing the estimate of work necessary, and the consequent expense, as is usual in undertakings of this class.

An old idea which has been "claimed" of late by a dozen engineers, but which was described in detail years ago in *The Iron Age*, and was not then new, having been practically applied for half a generation, is now to be tested on a large scale in France. A dispatch from Paris, under date of March 6, says: M. Daubourg, a French engineer, claims that he has devised a means for transporting large vessels over isthmuses, however steep, and an experiment is shortly to be made at Argenteuil by lifting a ship of 2000 tons from the River Seine and taking it on rails to another point on the river.

The Verein zur Beförderung des Gewerbefleisses has offered the following prizes: (1) 1000 marks for the best critical work (illustrated with drawings) on the blowing engines hitherto used for the Bessemer process, with statement of the results obtained; (2) 1000 marks for the best work on the manufacture of iron wire in the last ten years; (3) 1000 marks for the best work on driving-belts. The former offers of prizes for a substitute for caoutchouc and gutta percha, for transformation of rhodanides into cyanogen compounds, and for an investigation of pyroxilin, are renewed.

Mr. Henry F. Scharrett, a Mississippi planter, now in St. Louis, says that, in view of the negro exodus from the South and the disturbed condition of things in California, the planters in his section of the country have canvassed the question to some extent of attempting to obtain Chinese laborers. Correspondence has already been had with one of the Chinese companies, and probably some Chinamen will be set to work in Southern Mississippi in a few weeks.

PATENT DECISION.

Hardware dealers will please take notice of the decree of Judge Lowell, of the United States Circuit Court, in the case of Millers Falls Company against Quimby S. Backus, for infringement of Bit Brace Patents, which decree was in favor of the Millers Falls Company. The full text of the opinion may be found on page 11 of *The Iron Age*, of date December 18, 1879.

We have now obtained three separate decrees against three different manufacturers, and shall continue to prosecute all infringers. When the manufacturers are able to pay the damages we shall in no case trouble dealers, but when manufacturers are unable to pay we must ask the dealers to remunerate us, else responsible dealers might combine with irresponsible makers to render worthless the most valuable patents. Any reasonable man can see the point, and we have before given all dealers sufficient notice.

MILLERS FALLS CO.,
74 Chambers street, New York.

F. HABERMAN,

294 Pearl St., New York,

Manufacturer of the

Empire, Brighton and Favorite Oil

AND

Paragon Gas Stoves.

Illustrated catalogue and prices on application.

BUFFALO CHAMPION ICE CREAM FREEZERS.

FOUR STYLES.

FIFTEEN SIZES.

THE BEST ICE CREAM FREEZER IN MARKET.

Please send for Illustrated and Descriptive Price List.

Sidney Shepard & Co.

PROPRIETORS

BUFFALO STAMPING WORKS,

BUFFALO, N. Y.,

AND

CHICAGO, ILLS.

Bemis & Call Hardware & Tool Co.

This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

THE SWIFT MILL.

ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles.

ALSO LANE'S PORTABLE COFFEE ROASTER

Will roast 30 to 40 lbs. at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers.

LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

Our agents, Graham & Haines, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices

---

Beardsley Scythe Co.,

Manufacturers of

GRASS, GRAIN & BUSH SCYTHES,

Hay Knives & Corn Knives.

West Winsted, Conn.

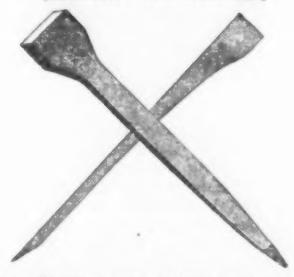
See our advertisement in *The Iron Age* first issue of each month.

NATIONAL Horse Nail Co.

MANUFACTURERS OF

FINISHED

(BRIGHT OR BLUED)



These nails are made of the best brands of **NORWAY IRON,** and are guaranteed to be equal to any in the market.

NATIONAL HORSE NAIL CO.,

VERGENNES, VT.

DURRIE & McCARTY, Agents,
No. 97 Chambers St., New York

The Oldest Shot Tower in America.

FOUNDED JULY 4, 1808.

THOMAS W. SPARKS,

Manufacturer of

SPARKS'

American Chilled Shot,

Rivaling the English and all Others.

STANDARD DROP & BUCK SHOT AND BAR LEAD.

121 Walnut Street, Philadelphia.

THE

Sprague Novelty Works,

15, 17 & 19 North Water Street,

ROCHESTER, N. Y.,

Manufacturers of

Hardware Specialties,

SPRAGUE'S

"Perfection," "Combination" and other Razor Strops.

Refer to *The Iron Age* first issue of each month.

A. F. PIKE,

East Haverhill, - New Hampshire,

Manufacturer and Wholesale Dealer in

Scythe, Axe, Knife and Hacker STONES.

Factories at Haverhill and East Haverhill, N. H., and Evansville and Westmore, Vt.

Genuine OLD RELIABLE,
INDIAN POND (Red Ends),
LETOILE,
LAMOILLE,
DIAMOND GRIT,
UNION,
WHITE MOUNTAIN,
PREMIUM,
GREEN MOUNTAIN,
MOWING MACHINE,
RAGG.

Stones gotten up and labeled in any style desired.

PRICE and QUALITY GUARANTEED.

All the above Stones are of good keen grit and *will not glaze.*

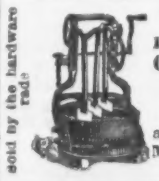
RIEHLÉ BROS.

STANDARD

SCALES AND **TESTING MACHINES**

Patent "Self-Adjusting" Railroad Track Scales, pronounced "the most accurate and durable" over all competitors at World's Fair, 1876. In use by Pennsylvania, Lehigh Valley, Baltimore and Ohio, and other Railroads. Patent Coal and Hay Scales. Warehouse and Platform Scales and Scales for all purposes. Machines for testing materials, all sizes.

Works, 9th st., at Master; Store, 52 S. 4th st., Phila
New York Office 91 Liberty Street.



sold by the hardware trade

"DRAW CUT"

BUTCHERS' MACHINES.

Choppers, Hand and Power Stuffers, Lard Presses.

Warranted thoroughly made and the BEST IN USE.

MURRAY IRON WORKS, Burlington, Iowa.

R. C. PURVIS,

Manufacturer of

Octagon Tea Pots.

Rear of 407 Cherry St., Philadelphia, Pa.

Send for Price List.

Established in 1839. Formerly L. & A. G. Coes.

L. COES & CO.

Manufacturers of L. Coes'

GENUINE IMPROVED AND MECHANICS

Wide Bar Full Length. Wide Bar Full Length.

Patent Screw Wrenches

UNDER PATENTS DATED

JUNE 26, 1866,
MARCH 23, 1869,
REISSUED 1870.

NOVEMBER 10, 1863,
FEBRUARY 23, 1864,
REISSUED JUNE 1, 1869,
IMPROVED AUG. 1, 1877.

The back thrust when in use borne by the SHANK instead of the Handle

None genuine unless stamped "L. COES & CO."

WORCESTER, MASS.

Warehouse, 97 Chambers St., & 81 Reade St., N. Y.

DURRIE & McCARTY, Sole Agents.

The 1880 Pennsylvania Lawn Mower

OUTSTRIPS ALL COMPETITORS.

LIGHT DRAFT AND EASILY ADJUSTED.

Every Machine Warranted to Work as Represented.

Points Claimed as being Meritorious:

Lightness combined with Strength in construction.
It runs more easily.
It will cut longer grass.
It is more durable.
It requires less repairs.
It cuts the grass more smoothly.
The attractive appearance of the machine
It is the lightest machine in use, and all that is necessary to satisfy our customers of its superiority is to place it in competition with any other machine in the town in which they may reside.

PRICE LIST.

Width of Cutter.	Style. Driving Wheels.	Power required.	Weight.	Price.
10 inch.	8 inch.	A Child.	30¾ lbs.	$14.00
12 "	8 "	A Lad.	33½ "	18.00
14 "	8 "	A Lady.	36 "	20.00
16 "	8 "	One Man Size.	38 "	22.00
18 "	8 "	" "	41 "	24.00

NEW MACHINES,

For Cutting Long Grass

15 inch, 10½ inch Driving Wheels, 6½ inch Cylinder, Man Size, 48 lbs..... $23.00
17 inch' 10½ inch Driving Wheels, 6½ inch Cylinder, Man Size, 51 lbs..... 25.00

For Sale By

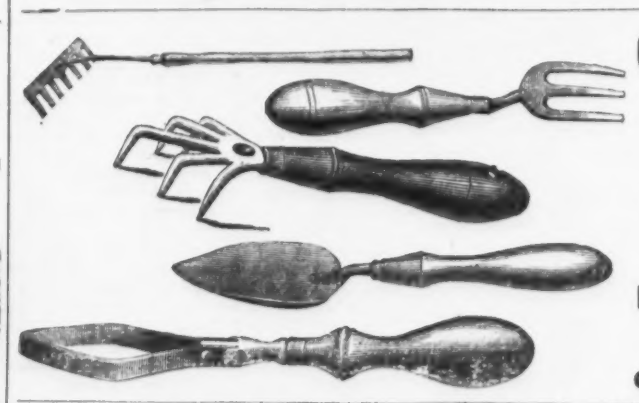
LLOYD, SUPPLEE & WALTON, Philadelphia.
DURRIE & McCARTY, New York.
AMES PLOW CO., Boston, Mass.
PRATT & CO., Buffalo, N. Y.
SIMMONS HARDWARE CO., St. Louis, Mo.
HAMILTON & MATHEWS, Rochester, N. Y.
MARKLY, ALLING & CO., Chicago, Ill.
DUCHARME, FLETCHER & CO., Detroit, Mich.
LOCKWOOD, VANDOORN & MILLER, Cleveland,
KRUSE & BAHLMAN, Cincinnati, O.
PRATT & CO., Elmira, N. Y.
LLOYD & CLARKE, La Crosse, Wis.
SMITH & SCRIBNER, Minneapolis, Minn.
HART & CO., Louisville, Ky.

H. S. MANNING & CO.,

Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.'S

Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers, also of Solid Bolt and Pipe Dies. Furnished in U. S. Standard and Whitworth shape of threads.

111 Liberty Street, NEW YORK.



Garden, Floral & Farm **TOOLS**

CHEAP. OF

Enterprise Mfg. Co.,

Ceneva, Ohio.

HUNTER'S Rotary Flour and Meal **SIFTERS.**

Mixer, Scoop, Measure, Weigher, Egg Beater, Rice Washer, Tomato, Pumpkin, Starch, Wine and Fruit Strainer.

The greatest combination known, and pronounced by press and public the only first-class Sifter in the world. Made better, of better stock, sifts much faster, and saves more material than all other Sifters. Made in two sizes: No. 1, 4 pts; No. 2, 8 pts. Liberal discount to the trade. Please mention this paper, and send for Illustrated Price List.

J. M. HUNTER & CO., Sole Manufacturers and Owners,
30 Emery Arcade, Cincinnati, Ohio.

HOOPES & MERRY,

Manufacturers of

"LION" Brand or B. B.—"PHŒNIX" Brand or Best Charcoal

GALVANIZED SHEET IRON,

539, 541, 543, 545 and 547 West Fifteenth Street, New York.

Corrugated Sheet Iron, Black or Galvanized. All kinds of Ironwork, Tinned or Galvanized.

SABIN MGF. CO.,

MONTPELIER, VT., MANUFACTURERS OF

DOUBLE-ACTING SPRING BUTTS,

SABIN'S LEVER DOOR SPRINGS, For heavy doors.

BOSS AND CROWN SPRINGS, For light doors.

Send for Catalogue.

RHODE ISLAND HORSE SHOE CO.,

MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern.

Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, President. C. H. PERKINS, Gen'l Manager. R. W. COMSTOCK Secretary

Late Advices from Brazil.

A gentleman representing about 50 leading American manufacturers has just returned from Brazil after an absence of several months. He conferred with Consul-General Adamson with reference to our commercial relations with Brazil, mingled freely with the people, and had the best opportunities for gaining reliable information. In a conversation with an *Iron Age* reporter he premised by saying that it is easier at the present time to talk of the difficulties that environ our trade than of the encouragements. In the first place the ground is fully occupied by foreign importers, English and German, who are fortified by all the capital required, and have on the spot a working force of efficient men. They know the language of the country and the wants of the people. At present there are scarcely any Americans in the trade who command equal facilities. Our merchants in New York generally demand payment in cash before shipping their goods, whereas their rivals grant long credits, and instead of being on the spot in direct communication with merchants who receive and distribute the goods, Americans keep aloof from the consumers, doing business from a distance.

For a proper understanding of the Brazil situation it is necessary that we study the character of the people, who are thoroughly Portuguese, both in language and tradition. The Portuguese founded a colony at Bahia about 350 years ago, in the course of their maritime discoveries, and built their houses in the prevailing Portuguese style. The same structures exist to-day, and others now building are just like them. Again, as stated to our informant by an old missionary resident, an enterprising New Englander attempted the experiment of growing coffee in Brazil. He hired a plantation on a 10-years' lease, and introduced modern machinery. This was four or five years ago. He commenced with an American plow, the first used in that region. Presently the owner appeared and ordered him to desist, as such an exhaustive process of cultivation had never been contemplated in granting the lease. With such a people, when they are approached by merchants who have goods to sell, the first question is, "Have you something that we know?" It is never, "Have you something better or cheaper than we are now using?"

Notwithstanding these ancient prejudices, very much has been accomplished in a few lines of goods, after untiring labor and a large outlay of capital. An American has for many years enjoyed almost a monopoly in coffee-hulling machinery in Brazil, but this success is due to his remarkable persistence and willingness to spend money, traveling, disseminating knowledge and showing how to use the machine. The agent of one of our leading sewing machine companies spent four years in hard labor and $40,000 in money before he established a trade; but ever since he has been rewarded by a ready demand and a decided preference for his goods.

An enterprising Englishman, a few years ago, took a few of our American cooking stoves to Rio, but found no market; nor could he induce any dealers to buy. He then employed a man to go around among the restaurants, hotels and large households, obtaining consent for a trial of the stoves, nothing more. His first experience was amusing, for after explaining the use of this novelty he revisited his newly formed acquaintances several times, finding in some cases that they were kindling fires in the ovens, or that small fires were built under each of the pot-holes. Often they failed to comprehend the use of the dampers. But, finally, these adult children became properly trained and were glad to purchase the stoves at a high price. Stoves are now in use in various parts of the empire, going far into the country. It is understood that some of these goods more recently ordered are cast in parts, so as to admit of easy transportation on the backs of mules. These incidents serve to illustrate what may be accomplished in many articles now manufactured in the United States. Can we expect to break through the fossil shells of Portuguese habits and create a general market for our goods? The answer is, we can compete successfully with all rivals by adopting means such as they employ, not only putting in labor and capital, but practically demonstrating the superior worth and real utility of the merchandise offered.

In one thing there has been a grand mistake. Large amounts of money have been wasted because our manufacturers were ignorant of the fact that Brazil is a Portuguese and not a Spanish country. Money has been thrown away in worthless advertising, because no more intelligible to the ordinary Brazilian than the Greek kalends. So, too, of unprincipled agencies. The prevailing iguorance cannot be better shown than by an alleged correspondent of a Boston newspaper, who professes to instruct American readers thus: "Now comes the chief point. Let these men (agents) thoroughly learn the Spanish language before they go there." It is certain this writer never saw the country he speaks of, and has read about it to very little purpose.

On the whole, as our informant remarked, Americans may be said to be steadily gaining in their commercial relations with Brazil. The successful introduction of one class of goods leads to further successes; and the American steamship line, by facilitating correspondence and an interchange of commodities, affords opportunities that should be improved. The disposition of the people and the government toward the people of the United States, moreover, is most cordial. Americans are readily received into their confidence.

A New German Trade Paper.—It has frequently been a matter of surprise to those noting the development of trade journalism in England and in this country, that the interests of the German iron, metal and hardware trades have so long remained without representation. There are many strictly scientific and exclusively commercial papers, but the important field between the two has been entirely neglected. The *Eisenzeitung*, a journal the first numbers of which have just been issued by Herr Wilhelm Kirchner, proposes to fill the gap. Herr Kirchner is favorably known in industrial circles in the capital of the German Empire, and as he intends to follow closely and report faithfully American progress, the establishment of his journal may lead to a wider and more general appreciation in Germany of our methods of working and our manufactures.

The East River Bridge.

At a meeting of the trustees of the East River Bridge held on March 1, Secretary Quintard read reports that show the expenses in January to have been $21,456, and in February, $48,744.47, and the total receipts and expenditures down to February 1, 1880, to have been as follows:

RECEIPTS.

From the city of New York, prior to June 9, 1875	$1,500,000.00
Since June 9, 1875	2,350,000.00
From the city of Brooklyn, prior to June 9, 1875	3,000,000.00
Since June 9, 1875	4,368,966.67
From rents	133,445.05
Interest	47,230.27
Horses and harness sold	2,700.00
Material sold	72,182.58
Wharfage	3,887.46
Scows sold	5,567.00
Total	$11,483,979.03

EXPENSES.

For engineers' salaries, &c.	$379,759.60
Office expenses, salaries	126,681.45
Timber and lumber	421,742.60
Construction	1,653,562.36
Contingent expenses	53,388.92
Rent	68,287.50
Tools	20,104.83
Labor	1,750,771.78
Machinery	134,378.88
Freight, cartage and towage	31,085.52
Printing and advertising	11,308.57
Land, land damages and buildings	3,139,879.61
Limestone	66,804.37
Granite	1,940,799.29
Interest and discount	171,099.88
Horses, wagons and harness	18,872.33
Cast steel and cable wire	623,733.16
Insurance	8,527.13
Taxes	14,531.83
Scows and repairs	30,811.70
Office and furniture	6,203.27
Loss on New York city six per cent. bonds	9,296.02
Loss on New York city seven per cent. bonds	3,509.18
Freight account Edgemoor Iron Co.	6.62
Total	$11,286,386.54
Cash in bank and petty cash on hand	197,544.49
Cash liabilities February 1	68,674.93

Partial Destruction of the Danforth Locomotive Works.

Early on the morning of Sunday, March 7th, a fire broke out in the upper floor of the machine shop of the Danforth Locomotive and Machine Works, at Paterson N. J. The fire alarm did not answer when sounded, so that the flames had fully 15 minutes start before the department turned out. It was subsequently discovered that the wires connecting the alarm-box at the works had been so tampered with that the box would not sound the alarm, a mysterious circumstance that is being investigated by the Police. The building first on fire was erected 40 years ago or more, and being saturated with oil was fine fuel for the flames, which spread rapidly, and in the course of two hours had entirely consumed the structure, in which were located not only the machine shop but the pattern room, where were stored the accumulations of years, which cannot be replaced, the blacksmith's shop, and the erecting shop. The foundry, molding shop, carpenter shop, and paint shop, on the opposite side of market street, escaped injury, as did also the shops connected with the silk and cotton machine department of the works. In the erecting shop were five locomotives "set up" and in the process of construction; one of them was all painted, and was to have been shipped to the Union Pacific Railroad immediately. The completion of these engines will be delayed for some weeks by the fire. The works were extremely busy, having orders ahead for six or eight months; they had counted on getting out nine locomotives this month; but this misfortune completely stops their production for the present, the machine shop and the erecting shop being absolutely essential for the finishing of a locomotive. However, while the ruins were still smoldering, the company began arrangements for the erection of new and much better buildings in place of those destroyed. About 300 hands will be temporarily thrown out of employment, but the other 500 will be kept at work in the remaining shops. Some of the blacksmiths have been agitating a strike for some days past, and had about concluded their plans for a turn-out next week. The fire precipitated the "turn out" sooner than they anticipated. The loss by the fire is estimated at $150,000 to $175,000; insured for about $90,000 on the burned buildings.

Pittsburgh Locomotives for Japan.—The Pittsburgh *Commercial Gazette* says: Two locomotives have recently been ordered here for a narrow gauge railroad in the Island of Yesso, the furthest one north in the Japanese group. The English have made immense efforts to build railroads and furnish their rolling stock in Japan. They have completed two short ones in the Island of Niphon. But the Japanese government finds itself badly fleeced pecuniarily, and, besides, it fears the unscrupulous aggressiveness of that people. It has, therefore, now commissioned a respectable American engineer, Mr. Joseph U. Crawford, who has spent a year or more in that country, to obtain in the United States the engines of which we have spoken. Mr. Crawford has made contracts with parties in this city for the two engines, which are to be called the "Benkei" and "Yoshitsze," after two celebrated Japanese heroes of ancient days. They are to be provided with the latest and best improvements, including the Westinghouse air brakes. The cars for the road are to be built at York, Pa. The spikes will be obtained from this city. The rails are ordered in England. There is no reason, we imagine, why the whole plant should not be obtained from this country. These, however, are the first orders of the kind sent here from China or Japan. We confidently expect they will not be the last. It may be added, as a suggestive feature of the locomotives, that the Japanese government is specially solicitous that the spark arresters should be efficient in preventing any chance means of exciting conflagrations in the numerous villages upon the line of the road. Were one of the thatched or dry and light shingle roofs to be set on fire, acres of the combustible houses and shops would likewise be swept entirely away. Such a calamity might prove fatal to the existence of the railroad in that region, through the hostility which might be created toward it among the people.

GLASS ITEMS.

A fire broke out on the night of the 4th instant in the chemical works and pot-house of the Depauw plate-glass manufactory, New Albany, Ind. Both were destroyed. The loss is between $40,000 and $50,000. Insurance $25,000, all in Eastern companies, except $4000 in the American Central, of St. Louis.

The Pittsburgh Clay Pot Company, Limited, have their factory at Manchester in operation, giving employment to some 30 persons, and this number will shortly be increased. They expect to turn out 90 to 100 glass melting pots per month, and will have the first lot ready for delivery about the 1st of next month. The factory is fitted up in the most complete manner, and supplied with all necessary machinery, including two clay mills, one a very large one. The arrangements are admirable, the clay entering at one side and passing regularly from hand to hand and process to process until it emerges in the shape of pots ready for the drying room. The success of the new enterprise is now assured.

The committee of the Union Glass Works Co., which propose to erect a factory at Bellaire, had a conference with Cleveland and Pittsburgh railroad officials relative to a site, but failed to make an agreement. They have purchased a site which comprises an acre, paying for it $2500. They will open a street around the works, and town lots will be laid off. The glass company also gets a coal privilege for five years.

Page, Harding & Co., who, in 1850, commenced in Massachusetts the manufacture of plate and window glass, are now employing 200 hands at their factory in Berkshire. They are running two 10-pot furnaces and turn out about 200 boxes of glass per day. They also make large quantities of glass shades.

The Belmont Glass Works, at Bellaire, Ohio, were erected in 1866, and have been very successful. The plant covers more than an acre of ground; two furnaces—19 pots—are operated, and the output annually is worth between $150,000 and $200,000. They now have orders sufficient to keep them running for the next three months.

The glass business in Pittsburgh is just now considerably hindered by the failure of the manufacturers to secure enough pots with which to manufacture sufficient stock to fill orders. In consequence of this, nearly all of the prominent firms on the South Side are from two to three months behind their orders, they having comparatively no hope of securing enough pots to run their factories until June. There is only one firm in Pittsburgh which manufactures these pots, and since the present boom in the glass trade set in the capacity of this establishment has been run to the fullest extent, but is, even under those circumstances, behind. Another pot house, which is controlled by the glass manufacturers themselves, and which is located out of the city, is manufacturing these pots as fast as possible; but as the orders came in so late, and as it takes about three months for the new pots to dry after their manufacture, they cannot be utilized before June.

Mr. J. J. Gill, of the Acme Glass Works, Steubenville, Ohio, has made some valuable discoveries and improvements in the method of melting glass. The furnace is known as the "direct-acting" glass furnace, and is a modified form of the Boetius furnace, patented in the United States as well as foreign countries. The gas is produced by generators immediately below the bench or floor of the melting chamber, and is burned by the introduction of highly heated air. The advantages claimed for this furnace are that it uses inferior fuel, and also much less fuel than other furnaces; that it gives a higher and more uniform heat, which results in a greater yield of melted glass; is easily regulated; can be built for less money than other gas furnaces, and that the old-fashioned furnaces can be readily and economically transformed into it. Gill Bros. are running two of these furnaces, and Hobbs, Brockunier & Co., of Wheeling, one. Last week the Hobbs furnace melted 58 large pots of glass, and in a run of 23 weeks they have reset only three of the original pots.

The Messrs. Atterbury & Co., of Pittsburgh, are experimenting with an open pot in their furnace.

The new vial and bottle factory of J. T. & A. Hamilton, of Pittsburgh, is rapidly nearing completion.

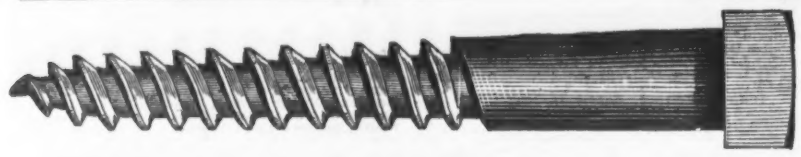
Every department of the glass works at Beaver Falls is fully manned and very busy on large orders. Among the many and various orders is a recent one for 200 gross of bird cups. These works have shipped over 500 gross of these little articles in the last six months.

The cable brings the following damaging evidence, the first in regard to the quality of the materials employed in the construction of the Tay Bridge: Several molders, employed by the contractors of the bridge, testified that the quality of the iron used for the castings was very inferior; that the columns were frequently defective, of unequal thickness, cracked and scabbed, and that the cracks and holes were filled with putty or cement and painted over. Should these statements be verified, they add another grave defect to those of design and construction, already fully proven by the inquiry of leading technical journals.

It is not generally known that the nickel five-cent piece now so extensively in circulation furnishes a key to the metric units of measure and weight. This coin is 2 centimeters in diameter and its weight is 5 grams. Five of them placed in a row will give the length of the decimeter, and two of them will weigh a decagram. As a kiloliter is a cubic meter, the key to the measure of length is also the key to measures of capacity.

The Iron Age Directory

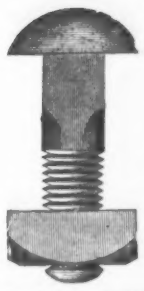
and Index to Advertisements.



WM. H. HASKELL & CO.,

Pawtucket, R. I.

MANUFACTURERS OF



COACH SCREWS

(With Gimlet Points),

ALL KINDS OF

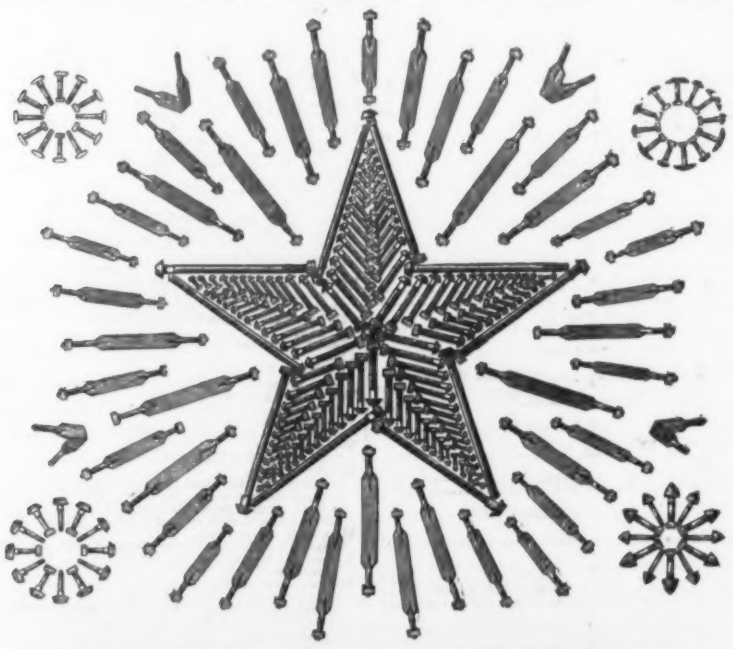
Machine and Plow Bolts,

FORGED SET SCREWS,

AND

TAP BOLTS.

HENRY B. NEWHALL, 11 WARREN ST. N NEW YORK AGENT



Norway and Charcoal Iron Carriage Bolts, Tire and Fancy Head Bolts, "Star" Axle Clips. Quality guaranteed. Finish unexcelled.

TOWNSEND, WILSON & HUBBARD.

2301 Cherry Street, Philadelphia, Pa.

THE BUCKEYE LAWN MOWERS.

SENIOR BUCKEYE.		JUNIOR BUCKEYE.	
10 inch	$14.00	16 inch	$22.00
12 inch	18.00	18 inch	24.00
14 inch	20.00		

JUNIOR BUCKEYE.	
10 inch	$13.00
12 inch	14.00
14 inch	16.00

The lightest and easiest running Mower in the market. It is unequaled for simplicity, strength and durability. It is compact, thoroughly made and beautifully finished. Every Mower warranted as represented.

Send for circulars and terms to

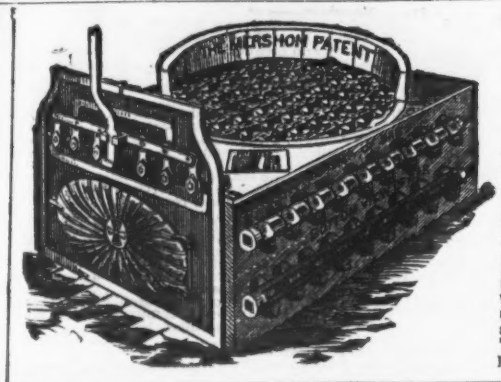
MAST, FOOS & CO.,

SPRINGFIELD, OHIO.

PATENTS

300 Euclid Ave., Cleveland, O. | CEO. C. TRACY & CO., Solicitors and Counsel in Patent Litigation | 519 Seventh St., Washington.

☞ Send for "ALL ABOUT PATENTS," 140 Pages—Free. ☜



The "Mershon" Patent Shaking Grate and Bar for Steam, Cast and Wrought-Iron Heaters, Steam Boilers, &c.

This is the most complete, easiest working, and the most successful grate and bar ever invented. The attention of manufacturers of boilers and heaters is especially called to it. It has the largest air surface of any grate manufactured, and will generate more heat and steam with the same amount of coal than any other grates. Several sizes supplied, ranging from 18 inches to 30 inches diameter fires. Send for descriptive circular. For license to foundries and others to manufacture address **Pennsylvania Heating and Ventilating Works,** N. W. cor. Twelfth and Filbert Streets, Philadelphia, Pa.

[See advertisement in *The Iron Age* of March 4, 1880.]

WHEELER & MELICK CO.,

ALBANY, NEW YORK, U. S. A.,

Manufacturers of

IMPROVED FARM IMPLEMENTS AND MACHINERY.

Steel Stamps.

N.Y. STENCIL WORKS..87 Nassau St. N.Y. STEEL LETTERS, FIGURES &c

NORWEGIAN PLOW CO.,,

DUBUQUE, IOWA.

W. C. CHAMBERLIN, President. GEO. STEPHENS, Sec'y and Treas.
C. W. MITCHELL, Vice President. H. H. SATER, Superintendent.

Manufacturers of the Celebrated

CAST STEEL DIAMOND-HARDENED

PLOWS.

OUR SPECIALTY.—Plows for difficult soils and of great durability. Also, Scrapers for railroad work. For durability and scouring qualities the best Plows produced in the country. Warranted to scour in any soil. Made with extra thick points and shins. Symmetrical and correct in model. Easy running and thoroughly pulverizing the soil.

Agents Wanted Everywhere.

SAWING THE LOG.

THE GREAT SUCCESS OF THIS WONDERFUL IMPROVED Labor Saving **GIANT RIDING SAW MACHINE** is fully demonstrated by the number in use and the present demand for them. It saws Logs of any size. **One man** can saw **more** logs or cord wood in one day and **easier** than two men can the old way. It will saw a two foot log in three minutes. **Every Farmer needs one.** Township agents wanted. Send for Illustrated Circular and Terms.

Address W. W. BOSTWICK & CO., 178 Elm St., Cincinnati, O.

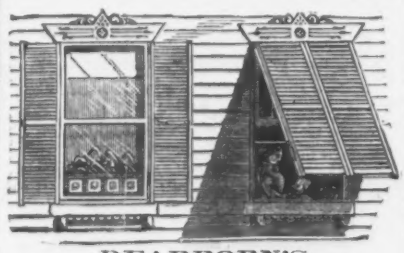
CAUTION.—Beware of all imitators and infringers. We own **five perfect patents** on these Giant Riding Saw Machines. We warrant every Machine.

Lemon Squeezer.

A New and Important Invention.

The operation is by a presser lever, standard link-supporting ring, guide rods, a cup, convex bed perforated. The lemon is cut in half, and the edges are spread out when pressed; this insures uniformity of pressure, breaking the cells of the lemon and extracting all the juice. A box of lemons can be squeezed in twenty minutes.

ROBERT ONDERDONK, Sole Manufacturer,
405 Grand St., New York.



DEARBORN'S

Pat. Adjustable Blind Awning Fixtures.

These goods are now well established in the market, having been in use for three years. For Price List of Feb. 15, 1880, and full particulars, discounts, &c., address **Boston Blower Co.,** Sole Manufacturers, Boston, Mass

Mellert Foundry and Machine Co., Limited,

Manufacturers of

Cast-Iron Water and Gas Pipe

of all sizes.

Valves and Hydrants, Flange Pipe and Lamp Posts. Machinery for Grist, Saw and Rolling Mills. Also the celebrated CANADA WATER WHEEL the cheapest and best in the world. Send for pamphlet.

READING, PA.

The Leading Wringer of America.

SIMPSON & GAULT,

(Peerless Wringer Co.)

New York Office, *79 Chambers St.*

European Offices, *Place Vendome, Paris. 7 Poultry, London.*

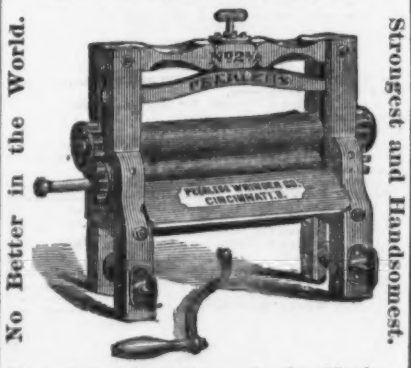
Office and Factory,

CINCINNATI, OHIO.

PEERLESS Clothes Wringers,

Sold by the Jobbing Trade everywhere.

No Better in the World.



Strongest and Handsomest.

Most Saleable Wringer in the Market.

TRY A SAMPLE ORDER.

Grant Fan Mill & Cradle Co.

Manufacturers of

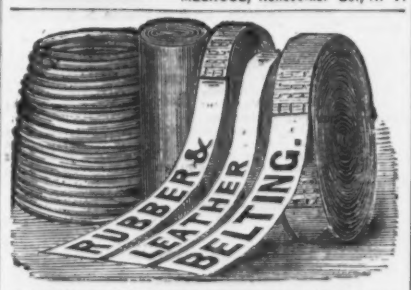
Grant's Grain, Coffee, Rice, Cochineal and Pimento Fans,

and

TURKEY WING GRAIN CRADLES, 4, 5 and 6 fingers.
GRAPE VINE GRAIN CRADLES, 4 fingers.
SOUTHERN PATTERN GRAIN CRADLES, 4, 5 and 6 fingers.

All of a superior quality. None genuine unless marked *Grant Fan Mill and Cradle Co.* Send for illustrated catalogue and price list.

P. O. Address,
MELROSE, Rensselaer Co., N. Y.



PECK & BEMIS. Jobbers of Rubber Goods, manufacturers of Leather Belting and Leather Fire Hose. Sole agents for Hoyt's celebrated Oak Tanned Belting, also N. Y. Belting and Packing Co.'s goods. Ladies' and Gents' Water-proof Garments. 167 Superior St., Cleveland, O.

HAWES' STEAM TRAP.

We guarantee this trap to work perfectly satisfactorily. Order one; if not satisfied, return at our expense. The monthly saving in fuel is more than cost of trap. Send for circular. Price from $5 to $15.

Welch & Lawson,
176 Centre st.,
New York.

W. & J. TIEBOUT,

Manufacturers of

Brass, Galvanized & Ship Chandlery Hardware,

No. 290 Pearl Street, New York.

GEORGE N. PIERCE, Buffalo, N. Y.,

Manufacturer of

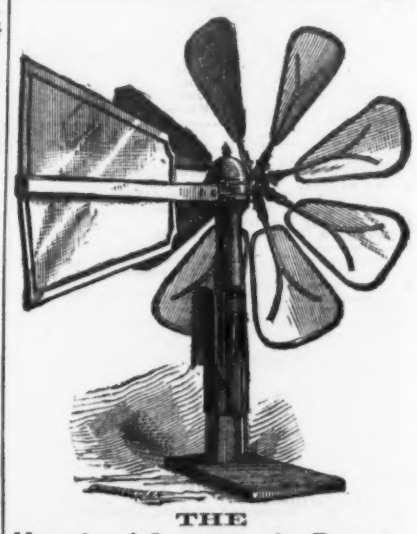
Bird Cages, Refrigerators

AND

HOUSE FURNISHING GOODS.

Send for Illustrated Catalogue.

OPEN STOVE VENTILATING CO.,
78 Beekman St., New York City
PHILLIPS, BUTTORFF & CO., Agts. at Nashville, Tenn.
J. MACLAY & CO., Agents at Dubuque, Iowa.
BUTLER & DIEL, Agents at Syracuse, N. Y.



THE

Hartford Automatic Pump.

Water Driven to any Hight and Distance by Compressed Air.

Country Houses Supplied Cheaply and Certainly for Bath Rooms, Water Closets, Hot and Cold Water Faucets, &c. Plenty of Fresh Water for Stock on Farms. The best Pump for Irrigating, supplying Railroad tanks, and for Mining purposes.

For Circular and Price list address,

EZRA BROOKS, Manufacturer,
Hartford, Conn., U. S. A.

TO STEAM USERS

Save Fuel and Money.

Obtain regular speed and prevent explosion by using

PEERLESS

DAMPER REGULATOR,

the greatest fuel-saving appliance ever invented. Adjustable to any pressure. In ordering mention pressure. Illustrated Catalogue sent on application. We set it up and guarantee performance. Price, $75.

AMERICAN STEAM APPLIANCE CO.

SOLE MANUFACTURERS,

13 and 15 Park Row, NEW YORK.

NATIONAL BOLT CUTTERS

GUARANTEED AHEAD OF ALL OTHERS FOR MANUFACTURERS & MACHINISTS

SEND FOR CATALOGUE

182 SENECA ST CLEVELAND O

Flanders' Improved Locomotive Cylinder Boring Machine.

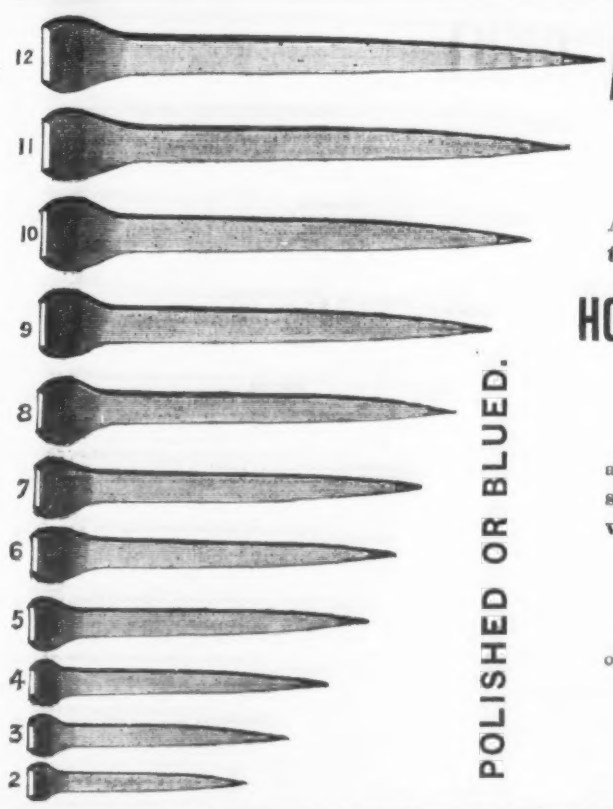
Bar and screw of cast steel, with two extra cutter heads. Manufactured and for sale by the

L. B. FLANDERS MACHINE WORKS,
1025 Hamilton St., Philadelphia, Pa.

See first issue of *The Iron Age* each month for illustration of

HARPER'S Lubricator for Steam Engines.

WESTVILLE, CONN.



POLISHED OR BLUED.

AUSABLE HORSE NAILS,

Twisted, Bent and Drawn COLD.

Hot Forged and Cold Hammered Pointed,

Are the **only Nails in market** that are made in imitation of the **Hand Process.** They have **the uniformity of Machine** Nails and the **toughness** of those hammered by hand Our

HOT FORGED AND COLD HAMMERED POINTED NAILS

Are the Standard Nails,

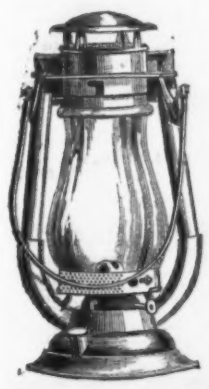
and are **acknowledged to be the best in the market.** They are used by the **best shoers** in **New York, Brooklyn, Philadelphia, Chicago, Saint Louis, Milwaukee, Baltimore,** &c., and

GENERALLY THROUGHOUT THE UNITED STATES.

They also compete successfully in Foreign Countries with machine and hand-made Nails of their own manufacture.

AUSABLE HORSE NAIL CO.,

4 Warren St., New York.



MILLER'S NO. 13 LANTERN

Gives more light and will hold the flame more perfectly than any other Lantern made.

For Prices and Samples, address

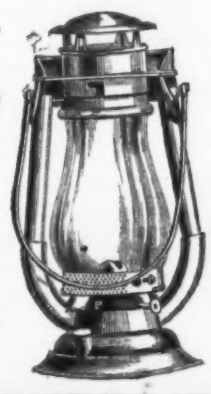
Edw'd Miller & Co.,

Meriden, Conn.,

OR

35 Warren St.,

New York.



Manufacturers of

Lanterns,
Brass Kettles,
Machine Oilers,
Kerosene Goods,
Tinners' Trimmings,
&c., &c.

THE ECONOMIC PATENT BOILER FEED PUMP, I. B. DAVIS, Maker, Hartford, Conn. Send for Circular.

EXCELSIOR LAWN MOWER

Roller Mower.

We solicit correspondence from the trade for prices and discounts.

We make *Seven Sizes* of *Roller Mowers* and *Six Sizes* of *Side-Wheel Mowers.* We claim for our Mowers

Perfect Work, Light Draft and Simplicity.

We have received many first premiums in competitive trials with other Mowers, both in this country and abroad. We have special patterns of Mowers for export, meeting the requirements of every market. Our new Horse Mower is conceded to be the *Lightest* and *Best* Horse Lawn Mower ever made. N. B.—Horse and Hand Lawn Mowers are alike guaranteed in all respects. Send for Illustrated Catalogue Address

Side-Wheel Mower.

CHADBORN & COLDWELL MFG. CO., Newburgh, N. Y.

WILEY & RUSSELL MFG. CO.,

Greenfield, Mass.

THE GREEN RIVER TIRE UPSETTER.

LIGHTNING

Screw-Cutting Machinery and Tools,

Lightning Screw Plates.
Lightning Bolt Cutters.
Green River Tire Upsetters.
Green River Horse Shoers' Vises.
Green River Drills.
Green River Tire Benders.
Tire Measuring Wheels, &c., &c.
Taps and Dies for use in Machines, Screw Plates, Bit Brace, Drilling Machines, &c.
Bit Brace Reamers, for Blacksmiths and Carriage Makers.

Send for Illustrated Price List

Iron and Brass Wood Screws.

We manufacture a full line of

IRON AND BRASS SCREWS.

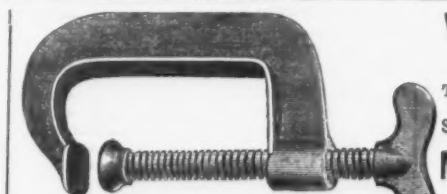
Quality, finish and tests as to strength, guaranteed equal to any in the market.

With improved facilities and largely increased capacity for production, we can fill orders promptly, and invite inquiries for discounts.

Philadelphia Screw Co., Limited,

Twelfth and Buttonwood Streets,

PHILADELPHIA.



Wood Workers' Clamps,

To open 2, 2½, 3, 4, 5, 6, 7, 8 and 10 inches.

Strongest and Best Clamp Made.

Malleable Ox Shoes

with

Steel Converted Toe Calk.

Five sizes.

CARRIAGE HARDWARE,

IVES, WOODRUFF & CO., Manufacturers,

(Send for Catalogue.) *MT. CARMEL, CONN.*

MERIAM & MORGAN PARAFFINE CO.

CLEVELAND, O.,

Manufacturers of

Cold Pressed Paraffine Oil,

Refined Paraffine Wax,

AXLE GREASE,

And a full line of

Railway, Machinery, Signal and Miners' Oils.

OILS

PARAGON AXLE GREASE

BRANCH OFFICES:
32 Oliver Street, Boston.
143 Front Street, New York.

AXLE GREASE AGENCIES:
Robinson, Lord & Co., New York.
Ferris & Avery, Chicago.

MARTIN'S ENGLISH HORSE CLIPPERS.

J. J. Shannon,

1707 Market St.,

PHILADELPHIA.

Recommended as the best Hand Clipper made.

$3.25 EACH.

Extra pieces for sale.

Send for circular.

A. B. GUNNISON,

MANUFACTURER OF

WOOD PUMPS

ERIE, PA.

ESTABLISHED, - 1856.

Warranted Genuine

Cucumber Pumps & Pipe. Also Poplar Pumps, Lined Pumps, &c.

The Trade Supplied by
H. B. GRIFFING, 60 Cortlandt St., N. Y.
P. MANN, Washington, D. C.
KIRK & DICKSON, New Castle, Pa
KNECHT & THOMAS, Winchester, Ind.

—AND BY—

A. B. GUNNISON

Manufacturer,
ERIE, PA.

PAT. "SCREW WINDOW BALANCES."

Retail Price, $1 per window (four balances).

Liberal Discount to the Trade.

Retain Medium and Light Window Sash at any point of opening, with large surplus holding power in reserve, available if required by drawing the adjusting screws. An acquaintance with the genuine merits of these goods, and their simple requirements in use will insure to them the favor of the user and applier.

A Mechanism always wanted, and as easily applied to windows as the common sash pulley, rendering the use of boxed frames, cords, pulleys, and the perplexing task of hanging sash unnecessary.

Sashes are locked with a meeting rail lock, as with weights.

Sample set, 4 Balances, sent postage free upon receipt of $1.

For sale by the Hardware trade. Send orders, &c., to

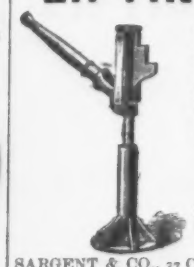
ROB'T B. HUGUNIN,

Manufacturer of Screw Balances, Wethersfield, Ct.

For sale by BUTLER & HUNTING, 53 Dey street, New York.

THE UNIVERSAL

LIFTING JACK,



For lifting carriages, wagons, heavy loaded teams, fire engines, railway cars, &c. Four sizes, with patent rubber cushions; will not mar the finest painted carriage.

DINSMORE MFG. CO.,

235 Washington St.,

BOSTON.

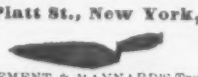
Silver medal awarded by Massachusetts Mechanic Charitable Association.

FOR SALE BY

SARGENT & CO., 37 Chambers St., New York.
MACOMBER, BIGELOW & DOUSE, 156 Oliver St., Boston.

GEORGE W. BRUCE,

1 Platt St., New York,



Agent for CLEMENT & MAYNARD'S Trowels, Hoes, Shovels, Spades and Scoops. Their Trowels and Hoes have entirely supplanted the English by their quality and cheapness, while all their goods compare advantageously with those of other makers, and are largely exported.

New York Wholesale Prices, March 10, 1880.

HARDWARE.

Anvils.
Eagle Anvils American)..........℘ lb 9½c dis 20 %
Wright's..........10½c @ 11c
Armitage's Mouse Hole..........9½ @ 9¾c
Trenton..........10½c

Augers and Bits.
Conn. Valley Mfg. Co.
Douglass Mf. Co.
Humphreysville Mfg. Co
Ives
Beecher (French, Swift & Co)
Griswold
Nobles Mfg. Co.
Kasson's Patent
} dis 40 % from list of Jan 7, 1880.
Cook's, Douglass Mfg. Co..........dis 40&10 %
Snell Mfg. Co's C. S. Augers..........dis 40 %
" B. Machine..........dis 40 %
" C. S. Bits..........dis 40 %
" " Jennings' Bits..........dis 35 %
Patent Solid Head..........dis 30 %
Russell Jennings' Auger Dowel, Machine-Dowel and Hand-Rail Bits..........dis 10&10&10 %
Russell Jennings' Augers..........dis 16⅔&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 25&10&10&10 %
Imitation Jenning's Bits..........dis 40@45 %
Lewis' "Jennings" Bits..........dis 33⅓&10 %
Lewis' Single Twist Bits..........dis 40 %
[illegible]ows Bits..........dis 50 %
Expansive Bits, Clark's, small, $18; l'ge, $26....dis 25 %
" Ives..........$20 @ $30—dis 33⅓ %
" " Blake's..........$20—dis 40 %
" " Parmelee's......$20 and $30 .dis 33⅓ %
Hollow Augers Ives' / French Swift & Co. } dis 15 %
" " Douglas..........dis 15 %
" " Bonney's Adjust., ℘ doz $48—dis 25&10 %
" " Stearns' Adjust., ℘ doz $48—dis 25&10 %
" " Ives' Expansive ...each $4.50—dis 30 %
" " Univ'sal Expansive, each $4.50—dis 20 %
Gimlet Bits..........$7.50 ℘ gross, dis 45 %
" Diamond..........℘ doz $1.10 dis 20&10 %
" "Bee"..........dis 45&10 %
Double Cut Gimlet Bits Shepardson's..........dis 40 %
" " Ct. Valley Mfg. Co...dis 30&10 %
" " Hartwell's..........dis 60&10 %
" " Douglass'..........dis 40 %
" " Ives'..........dis 50 %
Morse Bit Stock Drill, List of May 15, '78..........dis 25 %
L'Hommedieu's Ship Augers..........dis 15 %
Watrous Ship Augers..........dis 15 %

Awl Hafts.
Sewing Brass Ferrule..........$3.50 ℘ gross—dis 40&10 %
Peg " .... 3.50 " dis 40&10 %
Patent Sewing, Short..........$1.00 ℘ doz—dis 40&10 %
" " Long..........$1.40 ℘ doz—dis 10 %
" Peg Plain Top..........$10.00 ℘ gross—dis 40&10 %
" " Leather Top ..... 12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls Sewing, Common..........℘ gross $1.70—dis 25&10 %
" Shouldered Peg..........℘ gross 2.45—dis 25&10 %
" Patent Peg..........℘ gross .63—dis 25&10 %
" Shouldered Brad..........℘ gross $2.70—dis 25&10 %
" Handled Brad..........$7.00 ℘ gross—dis 20&10 %
" Handled Scratch..........$7.00 ℘ gross—dis 20&10 %
" Socket Scratch..........$1.00@$1.25 ℘ doz—net
Brad Sets, Aiken's..........℘ doz $12.00—dis 45&10 %
" No. 42, $10.50; No. 43, $12.50..........dis 60&10 %
" Stanley's Excelsior, No. 1, $9.60...dis 20&10 %
" " " No. 2, 4.80...dis 20&10 %
" " " No. 3, 7.80...dis 20&10 %

Axes.
Single Bit, 4½ to 5½ and under..........℘ doz $11.00 net
" 4½ to 6 and over..........℘ doz $11.50 net
" Beveled..........50 c ℘ doz advance
Double Bit, 4½ to 5½ and under..........℘ doz $22.00 net
" 4½ to 6 and over..........℘ doz $23.00 net
" Beveled..........$1.00 ℘ doz advance

Axle Grease.—Fraser's..........℘ lb 6c

Axles.
G. C. H. F. & Co..........6c ℘ lb net

Balances.
Till Spring Balances..........dis 15&10 %

Bells.
Hand, Light Brass..........dis. 55&10 %
" Extra Heavy..........dis 40 %
" White Metal..........dis 50 %
" Silver Chime..........dis 10&10 %
" Globe (Cone's Patent)..........dis 15&10 %
Gong, Abbe's..........dis 10&10 %
" Yankee..........dis 20&10 %
" Barton's..........dis 20&10 %
Crank Taylor's..........dis 25&10 %
" Brook's..........dis 60&10&2 %
" Cone's..........dis 10 %
" Connel's..........dis 35 %
Lever, Sargent's, new list Dec., '78..........dis 60&10 %
" Taylor's Bronze or Plated Lever..........net
" " Japanned Lever..........dis 25&10 %
" R. & E. M. Co.'s..........dis 50&10&2 %
Pull, Brook's..........dis 50&10&2 %
" Western..........dis 25&10 %
Call..........dis 25 %
Cow, Common Wrought..........dis 20&10 %
" Western..........dis 20&10 %
" Sargent's new list..........dis 30&10 %
" Kentucky "Star"..........dis 20&10 %
" " Sargent's new list..........dis 30&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog
$12.00 10.00 9.00 8.00 6.00 5.00 3.50 2.50 5.00 } dis 50 %
" Yaw's Genuine..........dis
" Texas..........dis 30&10
" Wilson's (Moore's)..........dis

Bellows.
Blacksmiths', Common..........dis 45 %
" Extra and Pittsburgh Pattern....dis 20 %
Moulders..........dis 10 %
Hand Bellows..........List of Dec. 1, 1879, net

Belting, Rubber.
N. Y. Belting and Packing Co..........new list net

Bit Holders.
Extension, Barber's..........℘ doz $15.00—dis 40&5 %
" Ives'..........℘ doz $15.00—dis 40 %
Diagonal..........℘ doz $24.00—dis 40 %
Angular..........℘ doz $24.00—dis 40 %

Blind Adjusters.—Domestic.....℘ doz $3.00, dis 5 %

Blind Fasteners.—Mackrell's..........dis 30 %
Van Sand's..........No. 3900, per gross, $10.00 net
" old pattern..........℘ gross, $9.00 net
Washburn's Patent..........℘ gross $10.50 net
Merriman's..........new list net
Mackrell's..........℘ doz. pairs, $0.65, dis. 10 %

Blind Staples.
Barbed, ½ in. and larger..........℘ lb 13½c net
" ⅜ in..........℘ lb 18c net

Blocks.—Burr & Co..........dis 25&10 %
Differential Pulley Blocks..........dis 20 %
Penfield Block Works, Rope and Iron Strap'd..dis 40 %
Wrot. Iron Com. bushed.dis 25 %
all steel roll'r.dis 10 %
Sheaves dis 35 %
Stanley R. & L. Co., Rope and Iron Strap'd dis 33⅓&10 %

Bolts.
Cast Iron Barrel, Shutter, &c..........dis 40&10 %
Cast Iron Chain (Sargent's list)..........dis 60&10 %
Bush's Lever and Chain Bolts..........dis 40 %
Wrought Barrel..........dis 40 %
" Square..........dis 40&10 %
" Shutter, all Iron, Stanley's list..........dis 45 %
" " Brass Knob, " " ..dis 20&10 %
" " Sargent's list..........dis 40&10 %
" Sunk Flush, Sargent's..........dis 60&10 %
" " Stanley's..........dis 30 %
" B.K.Flush, Com'n, Stanley's..........dis 45 %
" " Ex. Heavy, " ....dis 40 %
" "Plated Knob & Slide Flush " ...dis 40&10 %
Carriage and Tire, Common..........dis 60&5 %
" " Philadelphia, new list..........dis 50 %
" " Philada. Pattern.....dis 50@50&10 %
" " Shelton's..........(old list) dis 55 %
R. B. & W. Carriage (old list)..........dis 55 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79. dis 60 %
" Bay State..........dis 80 %
" R. B. & W., new list..........dis 60 %
Stove—American Screw Co.'s..........dis 37½ %
" R. B. & W..........dis 37½ %
Plow..........dis 40 %
" R. B. & W..........dis 40 %
Machine, List of July 15, '79..........dis 40 %
Bolt Ends "..........dis 40 %

Borax..........11½@12½c ℘ lb net

Boring Machines. Upright. Angular.
First quality, no Augers....$4.50 $6.75 dis 33⅓ %
Bush's, no Augers.......... 2.75 5.50 net.
Phillips' with Augers.......... .... 10.00 dis 40 %

Braces.—Barber's Patent..........dis 40&5 %
O. S. Backus..........dis 50&10 %
Wilson Mfg. Co..........dis 10 %
Spofford's Patent..........dis 50&5 %
Noble's Patent..........dis 40&5 %
Ives' Patent Braces..........dis 50@55&10 %
Common Ball (American)..........dis 50 %

Brackets.—Shelf (Sargent's)..........dis 40&10 %

Bright Wire Goods list of Dec. 15, 1879. dis 50&10 %

Bull Rings.—Union Nut Co..........dis 50&20 %
Sargent's..........dis 60&10 %
Hotchkiss'..........low list dis 35 %
Humason Beckley & Co.'s (low list)..........dis 5 %

Bung Hole Borers.
Enterprise Mfg. Co..........dis 25 %

Butts.
Wrought Brass..........dis 30 %
Cast Brass, Tiebout's..........dis 33⅓ %
" Corbin's..........dis 40&10 %
Fast Joint, Narrow..........dis 50&10 %
" Broad..........dis 20&10
Loose Joint..........dis 25&10 %
" Japanned..........dis 25&10 %
" with Acorns..........dis 30&10 %
Parliament Butts..........dis 25&10 %
Mayer Hinges..........dis 25&10 %
Loose Pin no Acorn..........dis 25&10 %
Acorns..........dis 25&10 %
" Japanned..........dis 30&10 %
Plated Tips....dis 30&10 %

WROUGHT IRON.
Fast Joint Narrow..........dis 25&10 %
Lt. Narrow..........dis 25&10 %
Broad..........dis 25&10 %
Loose Joint, Broad..........dis 25&10 %
Table Butts, Back Flaps, &c..........dis 25&10 %
Inside Blind, Regular..........dis 25&10 %
" Light..........dis 30&10 %
Loose Pin, Wrt..........dis 35&10 %
Spring Hinges—
American Spiral Spring Butt Co., Jap'd..........dis 25 %
" " " " Fancy..........dis 20 %
Gem Spiral Spring Butts, Japanned..........dis 25 %
" " " " Ornamental..........dis 20 %
Geer's Single and Double Acting..........dis 25 %
Sabin Mfg. Co.'s Double Acting..........dis 35 %
Union Spiral Spring, Japanned..........dis 25 %
" " Ornamental..........dis 20 %
Union Spring Hinge Co.'s..........dis 25 %
American Spring Hinge Co.'s..........dis 25 %
Union Mfg. Co..........dis 25 %
Bommer's..........dis 25 %
Blind Butts, Parker..........dis 50&10 %
Palmer..........dis 30&10 %
Seymour..........dis 50&10 %
" Shepard's "Double Locking" Nos. 1 & 2..........dis 50 %
" Shepard's "Noiseless," Nos. 50 & 60..........dis 50 %
" Lull & Porter..........dis 35&10 %
" Nicholson..........dis 45&10 %
" Huffer..........dis 35&10 %
" Clark's, Nos. 1, 3, 5, 40 and 45....dis 50&10 %
" Sargent's No. 12..........dis 50&10 %

Bow Pins.
Hotchkiss'..........low list net
Humason, Beckley & Co.'s (low list)..........dis 50 %
Sargent & Co.'s..........$19.70 and $21.50. dis 50&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co..........dis 20 %
Bradley's..........dis 25 %
Beatty's..........dis 25&5 %

1	2	3	4	5	6	7	8
$10.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Can Openers.
Messenger's Comet..........℘ doz $3.00. dis 25 %
American..........℘ doz $2.00. dis 70 %
Duplex..........℘ doz 2.50. dis 15@20 %
Lyman's..........℘ doz $3.75. dis 20 %
No 4. French..........℘ doz $2.25, dis 50 %
No. 5, Iron Handle..........℘ gross $7.50 net
Eureka..........℘ doz $2.50, dis 10 %
Sardine Scissors..........℘ doz $7.00, dis 55 %
Star..........℘ doz $5.00, dis 10 %
Sprague..........dis 50 %

Caps—Percussion, ℘ 1000.
U. M. C., F. C. trimmed..........50c / " F. L. ground..........70c } dis 10 %
G. D. & S. B..........36c, dis 7½ %
Double Waterproof, in 1-10's..........$1.40 / Colt's Pistol, "..........70c } dis 10&5 %
F. L..........50c / E. B. 1-10, Trimmed..........64c / E. B. 1-10 Ground Edge..........70c } dis 10& 5 %
Musket, in 1-10's..........60c net

Cartridges.—Metallic..........dis 50 %

Cards.—Horse and Curry..........dis 10 %
Cotton..........dis 10 %
Wool..........dis 10 %

Car Pusher.—"Giant"..........$6.25 each, dis 20 %

Carpet Stretchers.
Cast Steel, Polished..........℘ doz $5.00, dis 30 %
" Iron Steel Points..........℘ doz $2.00, dis 30 %

Casters.
Bed..........dis 15&10 %
Plate and Shallow Socket..........dis 15&10 %
Deep Socket..........dis 15&10 %

Cattle Leaders.
Humason, Beckley & Co.'s (low list)..........dis 50&10 %
Sargent's..........dis 50&10 %

Chain.
Trace, 6½-1-2..........℘ pair 79c / 6½-10-3..........℘ pair 70c / 7-10-2..........℘ pair 86c } dis
German Halter Chain, New list Oct. 22, '79..........dis 20 %
" Coil, New list Oct. 22, '79..........dis 20 %
Covert Halter, Hitching and Breast..........dis 35 %
Oneida Halter Chain..........dis 30 %
Galvanized Pump Chain..........℘ lb 11c net
Jack Chain, Iron..........dis 45 %
" Brass..........dis 35 %

Chalk.
White..........℘ gross 60c net
Red..........℘ gross 80c net
Blue..........℘ gross 100c net
White Crayons..........℘ gross 150 net

Chisels.
Socket Framing, Crossman..........dis 55&10 %
" Buck Bros..........new list, dis 22½ %
" Merrill..........dis 60 %
" Witherby Tool Co..........dis 60 %
" Douglass'..........dis 60 %
Firmers, Crossman..........dis 55&10 %
" Buck Bros..........new list, dis 22½ %
" Merrill..........dis 60 %
" Witherby Tool Co..........dis 60 %
" Douglass'..........dis 60 %
" Corner..........dis 60 %
Tanged Firmers extra..........dis 30@35 %
" Butcher's..........$5.00 @ $5.25 to £
" Spear & Jackson's..........5.00 to £
" Buck Bros (Shank)..........5.25 to £

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron..........dis 25 %
" Adjustable, Gray's..........dis 20 %
" " Lambert's..........dis 20 %
" " Snow's..........dis 40&5 %
" " Hammer's..........dis 15 %
" " Stearns'..........dis 15&10 %
" Cabinet, Sargent's..........dis 55&10 %
" Carriage Makers', Sargent's..........dis 55&10 %
" Cord and Tape (T. & S. Mfg. Co.)..........dis 30 %

Clips, Axle.
Norway or Best..........dis 40&5 %
Superior..........dis 40&5 %

Cockeyes....1¼ in., 28c.; 1½ inch, 33c.; 1¾ in., 47c, net

Cocks, Brass.
Racking..........new list, Jan. 1, '80
Globe.......... " "
Plain Bibbs.......... " "
Ale and Beer.......... " "
} dis 25 & 10 %

Coffee Mills.
Board and Box..........new list, Jan., 1880, dis 35 %
Increase Wilson's..........net
Selsor's Pat..........$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)..........dis 15 %
French Steel..........dis 20 %
The Swift (Lane Bros.)..........dis 20 %

Combined Dinner Pail and Lantern.
Per doz $14.00..........dis 30 %

Compasses, Dividers, &c.
Compasses..........dis 45 %
Callipers..........dis 45 %
Dividers..........dis 45 %
Bemis & Call Co.'s Dividers..........dis 60&5 %
" " Compasses & Calipers....dis 50&5 %
" " Wing & Inside or Outside.dis 50&5 %
" " Double..........dis 60 %
" " Call's Pat. Inside..........dis 30 %
Cook's..........dis 25 %
Excelsior..........dis 50 %
Miller's Patent..........dis 25 %

Coopers' Tools.
Bradley's..........dis 15 @ 20 %

Corkscrews.—Humason & B..........dis 33⅓ %

Corn Knives and Cutters.—Bradley's..dis 10 %
Wadsworth's..........dis 33⅓ %

Crow Bars.
Cast Steel..........℘ lb 7 c
Iron, Steel Points..........℘ lb 5½c

Curling Irons, &c.
⅜, ⅝, ¾ in., $1.80 2.00, 2.40..........dis 10 %
Curling Tongs..........℘ doz $3.65, dis 10 %
Pinching Irons..........℘ doz 7.50, dis 20 %

Curry Combs.
Fitch's (List of No. 240, $1)..........dis 40 %
Hotchkiss' Novelty..........dis 20 %
Lawrence..........dis 40 %
Lawrence, with detachable Mane Comb..........dis 35 %
Rubber..........℘ doz $9.00, dis 10 %

Curtain Pins.—Silvered Glass..........net
White Enamel..........net

Cutlery.
Meriden Cutlery Co. (Table)..........net
Am. Miller Bro.'s Cutlery Co..........dis 25 %
Humason & Beckley, Pocket..........dis 30 %
F. W. Rogers & Son, A. A..........dis 40&5&5 %
Naugatuck Cutlery Co..........list net
Aaron Burkinshaw's Pocket..........dis 25 %

Dog Collars.
Embossed Gilt..........dis 20 %
Leather..........dis 30 %
Brass..........dis 25 %

Door Springs.
Torrey's Rod..........℘ doz $2.84 net
Gray's "..........℘ doz $2.25, net
Bee Rod..........℘ doz $2.25, net
Gem (Coil)—
No. 1, Large, Japanned..........℘ doz $3.50
No. 2, Medium, ...℘ doz 2.50
No. 3, Small, ...℘ doz 2.00
} list net
Challenge (Coil)— Nos. 9 7 6
Japanned..........℘ doz $2.00 2.50 3.50
Coppered..........℘ doz 4.00 4.50 5.00
Galvanized..........℘ doz 3.50 4.00 4.50
Nickeled..........℘ doz 5.50 6.00 7.00
} dis
Premium (Coil)— Nos. 1 2 3
Japanned..........℘ doz $7.50 6.25 5.00
Nickeled..........℘ doz 11.00 9.50 8.00
} dis
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") Screen door size ℘ doz $1.75
No. 5, Screen Door Size..........℘ doz $2.00
No. 6, Medium..........℘ doz 2.50
No. 7, Large..........℘ doz 3.50
} dis 20 %
Sabin's Lever, No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss, ...No. 1, $5.40; 2, $4.20; 3, $3.00. dis 50 %
Sabin's Crown..........℘ doz $2.75, dis 50 %
Philadelphia..........5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed..........dis 20 %
Cowell's......No. 1, $18.00; No. 2, $15.00 ℘ doz, dis 50 %
Rubber, complete..........℘ doz $1.90, net

Drawing Knives.
Crossman's No. 1..........dis 55&10 %
Merrill..........dis 60 %
Nobles Mfg. Co..........dis 15 %
Bradley's..........dis 35 %
Adjustable Handle..........dis 20 %
Witherby Tool Co..........dis 60 %
Douglass..........dis 60 %

Drills and Drill Stocks.
Blacksmiths'..........each $3.50 net
Blacksmiths' Self Feeding..........each $7.50, dis 15 %
Breast, P. S. & W..........dis 20 %
" Hotchkiss..........dis 20 %
Breast, Wilson's..........dis 20 %
" Miller's Falls..........each $2.50, dis 25 %
" Bartholomew's..........each, $2.50 dis 45&10 %
Ratchet, Merrill's..........dis 20 %
" Ingersoll's..........dis 25 %
" Whitney's..........dis 15 %
" Weston's..........dis 20 %
" Moore's Triple Action..........dis 20 @ 25 %
Whitney's Hand Drill..........dis 50 %
Wilson's Drill Stocks..........dis 10 %
Automatic Boring Tools..........each $2.25, dis 20 %

Drill Chucks.—Morse's Beach Patent..........dis 30 %
" Adjust..each $10.00, dis 30 %
Danbury..........$8.00, dis 30 %

Egg Beaters.
Dover..........℘ gross, $42.00; ℘ doz $4.00 net
National..........℘ do 33⅓ %
Family..........per gross $33; per doz., $3.00 net

Elevator Buckets.
Mill E. Buckets, light, 3¼ to 10 in. (Due's Improved) ℘ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Due's Improved) ℘ doz $5.60 @ $10.20, net
Storehouse, (Due's Patent) 12 to 17, $12.00 @ $20.00...net

Emery and Emery Paper.
Genuine Chester—Regular Nos..........℘ lb
" " Flour and FF..........℘ lb
" " in 10-lb. cans..........2c extra
Washington Mills—Regular Nos..........℘ lb 8c
" Flour..........℘ lb 5c
Wellington Mills, Grain..........℘ lb 10c net
" " Flour..........℘ lb 8c net
Hampden Emery Grain..........9c net
" Flour..........3c net
B. & A. Emery Paper..........dis 20@25 %

Enameled and Tinned Ware.
Kettles..........dis 50 %
Sauce Pans..........dis 35&5 %
Tinned Sauce Pans..........dis 35&5 %

Escutcheon Pins.
Iron..........dis 25 %
Brass..........dis 35 %

Escutcheons.
Door Lock..........Same discounts as Door Locks
Brass Thread..........dis 60&10 %
Wood..........dis 25 %

Faucets.
Fenn's..........dis 40 %
Fenn's Cork Stops..........dis 33⅓ %
Star..........dis 55&10 %
Frary's Patent Petroleum..........dis 20&10 %
Wood and Metallic..........dis 40 %
West's Patent Key..........dis 45 %
Metallic Key, Leather Lined..........dis 40 %
Cork Lined..........dis 70 %
Enterprise (Self Measuring)..........℘ doz, $36.00, dis 15 %

Felloe Plates..........℘ lb 10c, dis 5 %

Files.
Auburn..........$5.00 to £, dis 35 %
E. M. Boynton's..........new list, dis 25 %
G. & H. Barnett, "Black Diamond"..........dis
Nicholson..........(Nicholson List) dis 20 %
Heller & Bros (new list)..........dis 10 %
Hiscox File Mfg. Co., new list..........dis 20 %
J. & Riley Carr..........4.50 to £
Johnson & Bro..........dis 30 %
Butcher's..........4.50 to £
Walter Spencer & Co.'s "Diamond"..........4.50 to £
Fisher's..........4.75 to £
Moss & Gamble..........4.50 to %
H. Disston & Sons (new list)..........dis
Western (new list)..........dis 20 %
Limet & Co. (French)..........$4.25 to %

Fluting Machines.
Knox, 4-inch Rolls..........$3.25 each
" 6 " " .... 4.00 "
" 8 " " .... 6.50 "
} dis 10 %
Peerless, 4-inch Rolls..........4.00 each net
" 5 " "..........4.75 each net
Eagle, 3½-inch Roll..........$2.15, dis 10 %
" 5½ " "..........$2.85, dis 10 %
Eureka, No. 1, 7-inch Roll..........6.00 each, dis 10 %
" No. 2 5-inch Roll..........4.00 each, dis 10 %
Crown, 4½-in. $3.50; 6-in., $4.00; 8-in., $6.50 each dis 10 %
Star.......... ... 4½ in., $4.00; 6 in., $5.00 each dis 10 %
Crown Jewel..........6 in., $3.40 each. dis 10 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 10 %
Domestic Fluter..........1.50 each net
Geneva Hand Fluter, No. 1..........℘ doz $15, dis 20 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.40; 3, $10.00 ℘ doz..........dis 10 %
Shepard Hand Fluter..........No. 75 ℘ doz $15, dis 10 %
" " " No. 90, $9.00; No. 110, $7.25;
" " " No. 100, $6.00 ℘ doz...........net
Clark's Hand Fluter..........℘ doz $15.00, dis 20 %
Combined Fluter and Sad Iron......℘ doz 15.00, dis 30 %
Buffalo..........℘ doz 10.00, dis 10 %

Fluting Scissors..........dis 45 %

Forks.
Hay, Manure and Spading..........dis 25 %
Plated "A 1, Rogers & Bro..........dis 40&5 %
" Reed & Barton..........dis 40&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co..........dis 15 %

Fry Pans.
Burnished, list as follows..........dis 4 %

No.	0	1	2	3	4	5	6	7	8
℘ doz	$2.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Acme Patent, same list as above..........dis 37½ %

Gauges.
Marking, Stanley's..........dis 45&10 %
" Chapin's..........dis 50&10 %
Wire..........dis 10 %
" Smith's Patent..........℘ doz $18.00, dis 40 %

Gimlets.
Nail and Spike..........dis 40@45 %
"Bee" Gimlets..........℘ gross $12.00 dis 60&10 %
"Eureka" Gimlets..........dis 50 %
"Diamond" Gimlets..........dis 40 %
Double Cut Shepardson's..........dis 40 %
" " Hartwell's..........dis 50 %
" " Ives'..........dis 50 %
" " Douglass'..........dis 40 %

Glue Pots.
Tinned and Enameled..........dis 30 %
Family, Howe's "Eureka"..........dis 40 %
" L. F. & C.'s "Handy"..........dis 25 %

Grindstone Fixtures.
Sargent's Patent..........dis 40&10 %
Reading Hardware Co..........dis 10 %
" " "Keystone"..........dis 10&10 %

Gun Wads.
U. M. C. B. E. 11 up..........$2.00
" " 9 & 10..........2.30
" " 7 & 8..........2.00
" P. E. 11 up..........3.10
" " 9 & 11..........4.00
" " 7 & 8..........4.90
} dis 5&5 %

Halters.
Covert's Pat. Rope..........dis 50 %
Horse and Cattle Ties, Covert's..........dis 50 %

Hammers.
Maydole's..........dis 15 %
Cheney's..........dis 25 %
H. Hammonds (new list Jan. 20, '80)..........dis 20 %
Verree..........dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75.dis 20&10 %
Warner & Noble's..........dis 10 %
Kip's (old list)..........dis 20 %
Yerkes & Plumb..........dis 15 %

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ℘ doz / " " Leg Irons, $25 ℘ doz } dis 10 %
Tower's..........dis 25 %

Handles.—Door or Thumb Latches—

Nos.	0	1	2	3	4	
Per doz	$0.80	1.00	1.18	1.35	1.50	dis 45&10 %

Roggin's Latches..........per doz 10c@15c net
Bronzed Iron Drop Latches..........℘ doz 60 @ 80c net
Jap'd Store Door Handles—Nuts, $1.80; Plate $1.20 no Plate, 96c..........net
Barn Door..........per doz $5.00, dis 45&10 %
Wrought Chest..........dis 50&10 %
Surface Chest, Sargent's list..........dis 50&10 %
Flush Chest..........dis 50&10 %
Lifting..........dis 45&10 %
Saw and Plane..........dis 40&10 %
Boynton's Pat. Loop Saw Handles..........dis 25 %
" " Centennial Saw Handles..........dis 25 %
Hammer and Hatchet..........dis 20 %
Brad Awl..........℘ gross $2.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ℘ gross $4.50
" " " large, " 5.00
Apple " " assorted, " 5.00
" " " large, " 6.00
Socket " " assorted, " 3.00
" Framing " assorted, " 5.00
File, assorted, ℘ gross..........2.75
Auger, assorted, ℘ gross..........6.00
" large, "..........7.00
} dis 20&10 %
Patent Auger, Ives'..........dis 25 %
" Douglass'..........℘ set $1.25, net
" Swan's..........℘ set $1, net

Hangers.
Barn Door..........dis 40&10 %
Novelty..........dis 40 %
Challenge..........dis 50 %
Climax (Anti-Friction)..........dis 40 %
Sterling Improved (Anti-Friction)..........dis 55&10 %
Cheritree..........dis 40 %
Kidder's..........dis 40 %

Harness Snaps.
Henshaw's....List of 1½ changed to 14.00, dis 55&2 %
Judd's.......... " " " 14.00, dis 55&2 %
Fitch's (Bristol) " " " 14.00, dis 40 %
Hotchkiss'..........dis 10 %
Andrews'..........dis 50 %
Sargent's..........dis 50&10 %
"German..........dis 60&5 %
Covert..........dis 40 %

Hatchets.
Isaiah Blood..........dis 15 %
Shingling, Nos. 1 2 3..........℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3..........℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3..........℘ doz 7.50 8.00 8.50
Hunt's..........net @ dis 5 %
Shingling, Nos. 1 2 3..........℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3..........℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3..........℘ doz 7.50 8.25 9.00
Hurd's..........dis 20 %
Shingling, Nos. 1 2 3..........℘ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3..........℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3..........℘ doz 8.00 8.50 9.00
Yerkes & Plumb..........dis 15 %
Shingling, Nos. 1 2 3..........℘ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3..........℘ doz 8.25 8.75 9.25
Lathing, Nos. 1 2 3..........℘ doz 7.50 8.00 8.50
Simmons's..........dis 20 %
Shingling, Nos. 0 1 2 3....℘ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....℘ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4....℘ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8....℘ doz 16.00 18.00 20.00 22.00
Collins..........dis 10 %
Shingling, Nos. 1 2 3..........℘ doz $6.00 $6.50 $7.00
Claw, Nos. 1 2 3..........℘ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3..........℘ doz 6.00 6.50 7.00

Hay Knives.
"Lightning"..........℘ doz $20.00 net
Wadsworth's..........dis 33⅓ %

Hinges.
Gate, Western..........℘ doz $10.00, dis 40&10 %
" N. E..........℘ doz $10.13, dis 40&10 %
" N. E. Reversible..........℘ doz $6.50, dis 40&10 %
Gate, Clark's No. 1..........℘ doz $9.00, dis 45 %
" N. Y. State..........℘ doz $6.10, dis 50&10 %
" Automatic..........℘ doz $12.50 dis 40 %
" Common Sense..........dis 10 %
" Seymour's..........dis 40&10 %
" Shepard's..........Nos. 10, 20 & 25, dis 40 %
Rolled Blind Hinges..........dis 40&10 %
Rolled Plate..........dis 40&10 %
Rolled Raised..........dis 40&10 %
Wrought Strap and T, list Dec. 20, '77..........dis 25&10 %
Plate Hinges "Providence" { 8, 10 & 12 in. $8.85 ℘ 100 lb / over 12 in. $7.50 ℘ 100 lb } ....dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $8.85 ℘ 100 lb / 14 to 36 in., $7.50 ℘ 100 lb } dis 10 %
Heavy Welded Hook { 8 to 12 in., $8.85 ℘ 100 lb / 14 in. & up, 6.80 ℘ 100 lb } dis 10 %
Screw Hook and Eye { ⅞ & 1 in., 100c / ¾ in. 120c / ⅝ in. 140c / ½ in. 160c } net

Hoes.—Solid Shank, C. S..........℘ doz $8.00, dis 25
Socket..........℘ doz 9.00, dis 25 %
Grub..........dis 15 %
Planters'..........dis 35 %
Scovill Pattern..........dis 33⅓ %
Scovill Pattern, Handled..........dis 25 %
Hick's Pat. Solid C. S. Planters'..........dis 20&10 @ 30 %
" " " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters..........dis 25 %
" " Scovill Pattern..........dis 20@25 %

Hooks.
Bird Cage, Sargent's list..........dis 50&10 %
Cotton..........dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 30 %
Cotton (Humason & Beckley Mfg. Co.)..........dis 40 %
Belt, (new list Dec. 24, 1879.)..........dis 55&10 %
Bench—Hotchkiss', $5.00 ℘ doz..........net
" Weston's, No. 1, $10.00; No. 2, $9.00 ℘ doz dis 25 %
" McGill's, $3.00 ℘ doz..........dis 10 %
" Skinner's, $6.25 per doz..........dis 20 %
Clothes Line Sargent's list..........dis 40&10 %
" " Reading list..........dis 10&10 %
Ceiling.. } Sargent's list..........dis 40&10 %
Harness. } Reading list..........dis 5&10 %
Coat and Hat, Sargent's list..........dis 40&10 %
" " Reading..........dis 15&10 %
" " T. & S. Mfg. Co's list..........dis 25 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross..........dis 25 %
Tassel (T. & S. Mfg. Co.)..........dis 40 %
Wrought Staples and Hooks and Staples..........dis 40&10 %
" Staples, Stanley's list..........dis 50&10 %
Wire Screw Hooks and Eyes, new list..........dis 50&10 %
Grass and Bush..........dis 40@45 %
Whiffletree—Patent..........dis 45 %
Hooks and Eyes—Malleable Iron..........dis 50&10 %
" Brass..........dis 50&10 %

Horse Nails.
Nos. 5 6 7 8 9 10
Ausable..........℘ lb 30c 27c 24c 24c 23c 22c
" Finished, Polished or Blued... " 31c 28c 26c 25c 24c 23c
} dis 20 %
A. C.......... 60 50 40 30 27 25 23 22 21 21 20 20c
Nos. 1 2 3 4 5 6 7 8 9 10 11 12
} dis 15 %
Bridgewater Iron Co. Pointed and Polished { Nos. 5 6 7 8 9 10 / 26c 23c 21c 20c 19c 18c } 25 %
Nos. 5 6 7 8 9 10
H. P. Pointed and Finished { 26 23 21 20 19 18 } dis 20 %
National, Pointed and Polished, Pat. Fin..... 28 25 23 22 21 20c 25 %
Putnam Hammer, P't'd 29 26 24 23 22 21c 10 %

Horse Shoes.—Burden..........℘ keg $
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy..........℘ keg
Mule Shoes..........℘ keg
Perkins' Snow..........℘ keg

Ice Awls, Chisels, &c.
American Ice Chisel..........℘ doz. $6.00 dis 45 %
National "..........℘ doz $6.25 dis 20 %
Novelty Ice Breakers..........℘ doz $6.25 dis 20 %
White's Sliding Head Picks..........℘ doz $2.50 dis 40 %
Dunlap's Ring Picks..........℘ doz $3.00, dis 40&10 %
Wood Head Picks, Sargent's ℘ doz $1.85, dis 60&10&10 %
Iron " ℘ doz 1.85, dis 60&10&10 %
Ice Mallets Pick in Head..........℘ doz 1.75 net
Pick in Handle..........℘ doz 3.00 net
Ice Axes, Small, Cast or Malleable..........℘ doz 1.20 net
Kitchen Ice Tongs..........℘ doz 2.25 net
Combination Ice Tools..........℘ doz $2.50 dis 30&10 %

Kettles.
Brass, 7 to 13 inches inclusive..........℘ lb 35c net
Brass, larger than 13 inches..........℘ lb 38c net
Enameled..........dis 50 %

Knives.
Ames' Butcher Knives..........dis 20 %
" Shoe..........dis 15 %
" Bread..........℘ doz $2.50, dis 15 %
Moran's Shoe and Bread Knives..........dis 20 %
Hay and Straw— Wadsworth's..........dis 33⅓ %
Table and Pocket..........See Cutlery

Knobs.
Carriage (Jap'd 80c. ℘ gross)..........dis 30&10 %
Base—Common..........dis 30&10 %
Hemacite Door Knobs..........New list, dis 35&5 %
Door, Mineral
" Por. Jap'd
" " Plated
" " Por.
} Same discounts as Door Locks.
Furniture, Plain..........75c gross inch, dis 10 %
" Wood Screws..........dis 20 %
Picture (T. & S. Mfg. Co.)..........dis 40 %
" Sargent's..........dis 45&10 %
Hemacite Picture..........dis 35 %
Shutter, Porcelain..........dis 50 %

Ladles.
Melting—Sargent's..........dis 40&10 %
" Reading..........dis 10&10 %
" Monroe's Patent..........℘ doz $4.00, dis 25 %

Lanterns.
Tubular..........No. 0, $8.60; No. 1, $10.15 / With Guards 35c extra. } net
Hurricane No. 2..........℘ doz $5.00, dis 10 %
Peerless..........No 5, ℘ doz $11.75, dis 10&10 %
Brady's Patent..........dis 10&10 %
Ætna..........dis 10&10 %
Yankee..........dis 10&10 %
De Beque..........dis 10&10 %
Police, Small, $7.50; Med., $9.00; Large, $12.00, dis 20&10 %
Convex Reflector..........$3.00 ℘ doz, dis 10 %

Lemon Squeezers.
Porcelain Lined..........℘ doz $6.00—dis 30 %
Wood..........℘ doz 3.00—dis 30 %
Eureka, Tinned..........℘ doz $8.00, dis 10 %
Dunlap's Improved..........℘ doz $4.00 net
Sammis'..........No. 1, $7.00; No. 2, $12.00 ℘ doz., dis 45 %
Townsend's Patent..........$6.00 ℘ doz., dis 33⅓ %

Lines.—Linen Fish..........dis 25&10 %
Cotton Chalk..........dis 55 %
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50..........dis 15&10 %
Mason's Linen..........dis 25&10 %
Wire Clothes, Galvanized..........each 30 @ 40c net

Locks and Latches.
Cabinet—Eagle / " Gaylord / " Bridgeport } Old list restored, March 1, 1880 —dis 10&2 %
" Barnes & Deitz..........dis 30 %
Trunk..........dis 10 %
Langstroth & Crane's List Jan. 1, '77.
Round Key, No. 1 to 5..........dis 40&10 %
" No. 5½ to 13..........dis 40& 10 %
Flat Key..........dis 33⅓&10 %
Barnes & Deitz, Flat Key..........dis 30 %
Yale Lock Co., Flat key..........dis 40 %
"Shepardson" or "U. S."..........dis 35 %
"Felter" or "American"..........dis 33⅓ %
Plate..........dis 20&5&2 %
F. Many's "Extension Cylinder"..........$10.50 ℘ doz, net

DOOR LOCKS, &C.
Branford
Norwalk
Norwich
P. & F. Corbin
Russell & Erwin
Mallory, Wheeler & Co.
Reading Hardware Co.
Trenton Lock Co.
} New list, Dec. 15, 1879. dis 30&2 %
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co. / " Wm. Wilcox & Co. } ....dis 10&5 % and 2 % for cash
" Yale Lock Mfg. Co.'s "Standard"..........dis 40 %
" Romer's..........dis 20 %
" Conestoga..........dis 60 %
" J. H. McWilliams..........dis 10 %
" Barnes & Dietz..........dis 35 %

Mallets.—Hickory..........dis 10&10 %
" Lignumvitae..........dis 10 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
℘ doz..$14.00 17.00 19.00 30.00—dis 25 %
Miles' Challenge..........Nos. 1 2 3
℘ doz...$22.00 30.00 40.00—dis 25 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each..........$3.00 4.00 5.00 11.00 13.00 36.00—dis 25 %
Woodruff's (P. S. & W.)....Nos. 100 150
℘ doz $15.00 18.00—....dis 25 %
Hales'..........Nos. 11 12 13
℘ doz..$36.65 44.40 56.60..dis 40&2&10 %
Draw Cut....Nos. 5 2 6 8 10
Each..$50.00 75.00 80.00 225.00 400.00—dis 20 %
American..........dis 25 %
Nos. 1 2 3 4 B 5
Each $5.00 7.00 10.00 25.00 50.00 60.00
Silver & Deming..........dis 25 %
Pennsylvania..........dis 40 %
Nos. 1 2 3
℘ doz..........$24.00 28.00 36.00
Beef Shavers (Enterprise Mfg. Co.)..........dis 25 %

Mincing Knives.
Am., 1 blade, $12; 2 blades, $21; 3 blades, $30 per gross.
Lathrop's..........dis 25 %
Smith's..........per doz $1.75, dis 10 %

Molasses Gates.
Stebbins Pattern..........dis 50&10 %
" Genuine..........dis 47½&10 %
" Tinned Ends..........dis 40&10 %
Chase's Hard Metal..........dis 60&10 %
Bush's..........dis 20 %
Lincoln's Pattern..........dis 50&10 %
Weed's..........dis 15 %

Nails..........See Trade Report

Nuts and Washers.
Square Nuts..........4½@5½c off list
Hexagon Nuts..........4½@5½c off list
Washers..........4 @5 c off list

Nut Crackers
Table (Humason & Beckley Mfg. Co.)..........dis 33⅓ %
Blake's Pattern..........℘ doz $2.50, dis 10 %
Turner & Seymour Mfg. Co..........dis 50 %

Oakum.
Best..........℘ lb 10½c
U. S. Navy..........℘ lb 9½c
Navy..........℘ lb 8c

Oilers.—Zinc and Tin..........dis 45 %
Brass and Copper..........dis 40 %
Olmsted's..........dis 40 %
Broughton's..........dis 40 %
Malleable (Hammer's)..........℘ doz $5.00, dis 10 %
Prior's Patent or "Paragon," Zinc..........dis 45 %
" " Brass..........dis 40 %

Ox Balls..........dis 60&10 %

Pencils.
Faber's Carpenters'..........High list, dis 40&10 %
" Round Gilt..........℘ gross $5.25 net
Dixon's Lead..........℘ gross 4.50 net
" Lumber..........℘ gross 6.75 net

Packing, Steam.
N. Y. Belting and Packing Co..........new list net

Picture Nails.
Brass Head, Sargent's List..........dis 35&10 %
" T. & S. Mfg. Co..........dis 40 %
Porcelain Head, Sargent's List..........dis 35&10 %
" " Judd's List..........dis 30 %
Porcelain Head, T. & S. Mfg. Co..........dis 30 %

Pinking Irons..........℘ doz 75c. net

Plaiting Machines.
Magic..........℘ doz $10.00, net
Astor Plaiting Machine..........each $15.00, dis 20 %
Crown Plaiting Machines..........dis 25 %
6in., $6.00. 10in., $10.00 each

Planes and Plane Irons.
Bench, First Quality..........dis 25&10 %
" Second "..........dis 30&10 %
Moulding..........dis 25&10 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79.dis 20&10 %
The Stanley (S. R. & L. Co.) " " dis 20&10 %
Bailey's "Victor"..........dis 20&10 %
Defiance Adjustable..........dis 20&10 %
Plane Irons, Butcher's..........$5.50 to £
" Buck Bros..........$5.00 to £
" Auburn Tool Co.'s..........dis 5&10 %
" Middletown Tool Co..........dis
" Ohio Tool Co..........dis 5&10 %
" Sandusky Tool Co..........dis 5&10 %

Pliers and Nippers.
Button's Patent..........dis 33⅓ %
Hall's Patent Nippers, No. 1, $15; No. 2, $21 ℘ doz, dis 25 %
Humason & Beckley Mfg. Co..........dis 33⅓ %
Gas Pliers..........dis 50 %
Eureka Pliers and Nippers..........dis 25 %
Russell's Parallel..........dis 25 %
P. S. & W. Cast Steel..........dis 30 %
" End Cutting Nippers..........dis 25 %
" Tinners' Cutting Nippers..........dis 15 %

Plumbs and Levels.
Disston's..........dis 65 %
Stanley R. & L. Co.'s Pat. Adjustable..........dis 60&10 %
" " Non-Adjustable..........dis 50&10 %
Chapin's Patent Adjustable..........dis 60&10 %
" Non-Adjustable..........dis 60&10 %
Standard Rule Co.'s New Adjustable..........dis 60&10 %
" Non-Adjustable..........dis 60&10 %
Johnson's Patent Adjustable..........dis 60&10 %
Pocket Levels..........dis 60&10 %

Post Hole and Tree Augers.
Samson Post Hole Digger..........per doz $37.50, dis 20 %
Fletcher Post Hole Augers..........℘ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz..........dis 15 %
Eureka..........℘ doz $40.00, dis 40 %

Potato Parers, &c.
Bay State..........℘ doz $13.00 dis 10 %
"Saratoga" Peeler and Slicer..........℘ doz 7.75 dis 10 %

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $19.00, dis 20 %
" Pruning Hook.......... " 12.50 dis 20 %
E. S. Lee & Co.'s Pruner..........dis 30 %
Pruning Shears..........℘ doz $5.50@$8.00

Pulleys.
Hot House and Tackle..........dis 50&10 %
Jap'd Screw..........dis 50&10 %
Brass Screw..........dis 45&10 %
Jap'd Side..........dis 50&10 %
" Clothes Line..........dis 50&10 %
Hay Fork, Solid Eye, $4.50; Swivel, $5.00, dis 30&10&10 %
" " "Anti-Friction,"..........$7.50 dis 20&10 %
" " "F" Common and Pat. Bushed..........dis 20 %
" " Tarbox Pat. Iron..........dis 20 %
Shade Rack..........dis 50 %

Punches.
Belt or Drive . . . . . ₩ doz $2.00: 2.25: 2.50. dis 40 %
Bemis & Call Co.'s Cast Steel Drive. . . . . dis 50&5 %
" " Springfield Socket. . . . . dis 50&5 %
Spring. . . . . ₩ doz $7.00. dis 40 %
" Leach's Patent. . . . . dis 15 %
Bemis & Call Co.'s Spring and Check. . . . . dis 40 %
Solid Tinners'. . . . . ₩ doz $1.44, dis 25 %

Rail.
Sliding Door Wrought Brass. . . . . ₩ lb 40c dis 10 %
" " Iron, Painted . ₩ foot 9c. dis 40&10 %
Barn Door, ½, ⅝ and ¾ inch. . . . . dis 40&10 %
" for N. E. Hangers. . . . . dis 40&10 %

Rakes.
Cast Steel. . . . . dis 15 %
8 10 12 14 16 teeth.
$5.00 6.75 6.50 7.25 8.00
Malleable. . . . . dis 15 %
10 12 14 teeth.
$3.60 4.00 4.40

Razor Straps.
Genuine Emerson. . . . . dis 40 %
Badger's Emerson. . . . . dis 40 %
Badger's (not Emerson). . . . . dis 25 %
Evans'. . . . . dis 40 %
Imitation Emerson. . . . . ₩ doz $2.75. dis 40&10 %
Want's. . . . . dis 40&5 %
Chapman. . . . . dis 15 @ 20 %
Saunder's. . . . . dis 10 %
Torrey's. . . . . dis 20 %

Rivets.
Iron and Tinned } new list Oct. 1, 1879 } . . . . . dis 30 %
In bulk } . . . . . dis 10 %
Copper Rivets and Burs. . . . . dis 25 %
Nos.. 7 8 9 10 11 12 13 14 15
₩ lb..490 500 520 540 560 580 600 640 700
Tinned Iron Belt Rivets and Burs. . . . . dis 10 %

Rivet Sets. . . . . . dis 25 %

Rods.
Stair. . . . . New list, March 1, '79, dis 25 %
" American Patent. . . . . dis 40 %

Rollers.
Barn Door, Sargent's list. . . . . dis 55&10 %
Novelty. . . . . dis 10 %
Acme (Anti-Friction). . . . . dis 40 %

Rope. Manufacturers' Net List. Dec. 10, 1879.
Manila. . . . . ½ inch and larger ₩ lb 14½c
" . . . . . ⅜ inch ₩ lb 15 c
" . . . . . ¼ and 5-16 inch ₩ lb 15½c
Tar'd Rope. . . . . ₩ lb 14 c
" " Lath Yarn. . . . . ₩ lb 14 c
" Hay Rope. . . . . ₩ lb 14½c
Sisal. . . . . ½ inch and larger ₩ lb 13 c
" . . . . . ⅜ inch ₩ lb 13½c
" . . . . . ¼ and 5-16 inch ₩ lb 14 c
" Hay Rope. . . . . ₩ lb 13 c

Rules. Boxwood. Ivory
Chapin's, Standard, Stanley, Stephens } dis 55 & 10 % } dis 45 &10 %

Sad Irons.
From 4 to 10 lbs. . . . . ₩ lb 4½c net
Self Heating. . . . . ₩ doz $9.40 net
" Tailors'. . . . . ₩ doz $18.00 net
Gleason's Shield and Toilet. . . . . dis 25 %
Enterprise Patent Cold Handle . . . . . dis 20 %
Mrs. Pott's Pat. Cold Handle, "Crown". . . . . dis 20 %
Combined Fluter and Sad Iron..per doz $14.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½. .$4.75 ₩ ream
" " " 2, 2½ & 3. 4.25 ₩ ream
" " " Assorted 4.75 ₩ ream
" " Star. . . . . 3.75 ₩ ream
" " Emery..₩ ream $6.50 @ 11.50
New England, same list as B. & A. Flint. . . . dis 20@25 %
Gaze's. . . . . dis 20&5 %

Sash Cord.
Common. . . . . ₩ lb 14 @ 20c net
Patent. . . . . ₩ lb 19c net
Silver Lake, Russia Flax. . . . . ₩ lb 60c. dis 10 %
" White Cotton. . . . . ₩ lb 60c. dis 10 %
" Drab Cotton. . . . . ₩ lb 65c. dis 10 %
Raw Hide. . . . . dis 25 %
Steel Ribbon. . . . . dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross. . . . . dis 50%
Ferguson's. . . . . dis 33⅓ %
Walker's. . . . . dis 10 %
Hammond's Window Springs. . . . . dis 25 %
Northup Window Springs. . . . . $9.00 per gross, dis 10 %
The Perfect, Clark & Smith, Plain Jap'd ₩ gro $10.00 net
" " Por.Knob Jap'd. ₩ gro 14.00 net
" " Nickel-Plated...₩ gro 27.00 net

Sash Weights.—Solid Eyes, in 500 lb lots and over. . . . . ₩ lb 2¼c net

Sausage Stuffers or Fillers.
Miles. . . . . ₩ doz $20, dis 30 %
Perry. . . . . ₩ doz, No. 1, $15; No. 0, $21, dis 25 %
Braw Cut No. 4. . . . . each $30.00, dis 20 %
Enterprise Mfg. Co. . . . . dis 20 %
Silver's. . . . . dis 25 %

Saws.
Disston's Circular. . . . . dis 35 %
" Mill. . . . . dis 35 %
" Cross Cut. . . . . dis 20 %
" Hand, Panel, Rip, &c. . . . . dis 20 %
Boynton's Lightning, Cross Cuts, new list. . . . . dis 20 %
" One-Man, all lengths, " . . . . . dis 20 %
" Billet Webs, 30 in. " . . . . . dis 25 %
" Lightning Buck Saws X Far. . . . . dis 25 %
" Lightning Hand, Panel and Rip. . . . . dis 25 %
Wheeler & Clemson Mfg. Co.'s Hang. . . . . dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen. . . . . dis 20 %
" Framed Wood—
Nos.. 101 102 103 104 105
Per doz..$10.00 8.00 10.00 7.50 6.25 net

Saw Frames.
White, Vermont. . . . . ₩ doz $1.35, dis 25 %
Red, Polished and Varnished. . . . . ₩ doz $2.00, dis 25 %
Saw Rods. . . . . $10 list dis, 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz., $10.00. . . . . dis 20 %
Stillman's Genuine. . . . . ₩ doz $1.60@$4.50 net
" Imitation. . . . . ₩ doz $3.25. dis 20&10 %
Common Lever. . . . . per doz $2.00. dis 20&10 %
Leach's. . . . . No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's. . . . . No. 1, $8.40; No. 2, $5.40, dis 20 %
Hammer, Hotchkiss. . . . . $5.40. dis 10 %
" Bemis & Call Co.'s New Pat. . . . . dis 40&5 %
Bemis & Call Co.'s Lever & Spring nammer..dis 20&5 %
" " Plate. . . . . dis 10 %
" " Cross Cut. . . . . dis 12½ %
Aiken's Genuine. . . . . $13.00. dis 5&10 %
" Imitation. . . . . $7.00. dis 10 %
Hart's Patent Lever. . . . . dis 20 %
Disston's. . . . . dis 20 %

Scales.
Hatch, Counter, No. 171. . . . . ₩ doz $36. dis 25 %
" Tea, No. 161. . . . . ₩ doz $15.00 dis 33⅓ %
Union Platform. . . . . $2.00. dis 40 %
Fairbanks'. . . . . dis 20 %
Buffalo Scale Co. . . . . dis 40 %
Howe's. . . . . dis 40&5 %
Chatillon's Grocers'. . . . . dis 40 %
" Eureka. . . . . dis 25 %
Family Universal. . . . . dis 20 %
" Favorite. . . . . dis 30 %
" Turnbull's. . . . . dis 20 %
Scale Beams, Chatillon's list. . . . . dis 15 %
" Sargent's list. . . . . dis 35&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.) $6.50. dis 20&10 %
Box, 1 Handle. . . . . ₩ doz $5.00, dis 10 %
" 2 " . . . . . ₩ doz 6.00 dis 10 %
Defiance Box and Ship. . . . . dis 20&10 %
Foot. . . . . dis 70&10 %
Ship (common). . . . . per doz $3.00 net
" (Providence Tool Co. . . . . dis 10 %

Screw Drivers.
Douglass Mfg. Co. . . . . dis 20&10&10 %
Disston's. . . . . dis 40 %
Disston's Patent Excelsior. . . . . dis 40 %
Buck Bros . . . . . dis 25 %
Stanley Rule & Level Co., Varnished Hdls. . dis 45&10 %
" " Black Handles. . . dis 35&10 %
Sargent & Co.'s. . . . . dis 40&10 %

Screws.
Flat Hd Iron. . . . . dis 40 %
Round Head Iron. . . . . dis 30 %
Flat Head Brass. . . . . dis 30 %
Round Head Brass. . . . . dis 15 %
Brass and Silver Capped. . . . . dis 40 %
Japanned, list of Plain Screws. . . . . dis 20&10 %
Lag or Common Coach. . . . . dis 40@45 %
Coach Patent Gimlet Point, List per 100. . . . dis 40@45 %
Bed. . . . . dis 40&10 %
Machine, Flat Head, Iron, Am. Screw Co. . . . . dis 60 %
" Round Head, Iron, " . . . . . dis 55 %
Bench, Iron. . . . . dis 40&10 %
" Wood, Beech. . . . . ₩ doz $3.00. dis 15 %
" Hickory. . . . . dis 20&10 %
Hand. . . . . dis 20&10 %
Hand Rail, Sargent's. . . . . dis 55&10 %
" " Humason, Beckley & Co's . . . . . dis 33⅓ %
" " Am. Screw Co. . . . . dis 35 %
Jack (Wilson's). . . . . dis 35 %

Screw Window Balances.
R. H. Hugunin's, Single gro., $23.94; 5 gro. $22.68, dis 5 %

Shears and Scissors.
Cast Iron, (American). . . . . dis 60&10 %
Pruning. . . . . see Pruning Hooks and Shears.
Barnard's Lamp Trimmers. . . . . ₩ doz $3.75
Tinners'. . . . . dis 15 %
Cast Steel, List, Nov. 25, 1879. . . . . dis 80 %
Seymour's " " . . . . . dis 60 %
Heinsch's " " . . . . . dis 60 %
" Tailors' Shears. . . . . dis 33⅓ %

Sheaves.
Sliding Door, M. W. & Co., list. . . . . dis 33⅓&2 %
" R. & E. list. . . . . dis 60&10&2 %
" Patent Roller. . . . . dis 10 %
" " Hatfield's . . . dis 55&10&2 %
" Russell's Anti-Friction . . . dis 55&10&2 %
" Moore's Anti-Friction. . . . . dis 40 %
Sliding Shutter, R. & E. list. . . . . dis 60&10&2 %
" " Sargent's list. . . . . dis 50&10 %
Moore's Anti-Friction (Hanging) . . . . . dis 40 %
Philadelphia Hanging. . . . . dis 40&5&2 %

Shovels and Spades.
Ames. New list, Jan. 26, 1880. . . . . dis 10 %
Hussey Binns & Co., Patent. . . . . dis 15 %
" " Association List. . . . . dis 5 %
Old Colony (changes in list Oct. 15, '79). . . . . dis 15 %
Remington's (Lowman's Patent). . . . . dis 30 %
Dunning's Shovels and Scoops. . . . . dis 30&7½ %
Rowland's. . . . . dis 40&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list. . . . . dis 40&10&2 %
Polished Steel . . . . . new list, dis 30&5&10&2 %

Slates.
Square Frames by case. . . . . dis 70 %
Less than a case. . . . . dis 60&10 %

Spoke Shaves.
Defiance Metallic. . . . . dis 20&10 %
Iron. . . . . dis 30 %
Wood. . . . . dis 30 %
Bailey's (Stanley R & L. Co.) new list. . . . . dis 20&10 %

Spoke Trimmers.
Bonney's. . . . . ₩ doz $10.00 dis 40&5 %
Stearn's. . . . . ₩ doz $10.00, dis 40 %
Ives'. . . . . No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 40&10 %
Douglass'. . . . . ₩ doz $9.00, dis 15 %

Spoons.
Pat. Thread Basting. . . . . dis 35 & 5 %
" Riveted Table and Tea. . . . . dis 40 %
Solid Table and Tea. . . . . dis 45 %
Britannia. . . . . dis 55 %
W. Rogers & Son, A. A. . . . . dis 33⅓&5 %
Reed & Barton. . . . . dis 33⅓&5 %
Hall & Elton. . . . . dis 33⅓&5 %
Holmes, Booth & Haydens. . . . . dis 33⅓&5 %
German Silver. . . . . dis 25&10 %
Cast Steel, Sil. Plated. . . . . dis 33⅓ %
Tin (P. S. & W.), Teas. . . . . $1.25 ₩ gross, net
" " Tables. . . . . $2.00 ₩ gross, net
Tin Cowles Hdw. Co.). . . . . dis 10 %
" " " case lots. . . . . dis 20 %

Stocks and Dies. . . . . . dis 60&10 %
'Lightning" Screw Plate. . . . . dis. 10 %

Stone.
Hindostan Stone. . . . . ₩ lb 6c } dis 30
" Ax Stone. . . . . ₩ lb 8c } &10 %
" Slips. . . . . ₩ lb 10c }
Sand Stone. . . . . ₩ lb 6c. dis 33⅓&10 %
Washita Stone. . . . . No 1, ₩ lb 18c net
" " . . . . . No 2, ₩ lb 14c net
" Slips. . . . . No. 1, ₩ lb 36c net
Washita Stone (Boyd & Chase). . . . . No. 1 ₩ lb 15c net
" " mo'ted (Boyd & Chase) 0, 7 & 8 in, dis 30 %
" " No. 2. . . . . ₩ lb, 13c, net
" " No. 2. . . . . ₩ lb 13c net
Turkey Oil Stone (Boyd & Chase). . . . 4 to 8in, $1.00 ₩ lb, dis 10 %
" Slips " . . . . . $2.50 ₩ lb, dis 10 %
Lake Superior (Boyd & Chase). . . . . ₩ lb 20c, dis 10&5 %
" " Slips " . . . . . ₩ lb 45c, dis 10&5 %
Grindstones. Family, Loring's. . . . . dis 10 %

Stove Polish.
Joseph Dixon's. . . . . ₩ gross $6.00. dis 10 %
Gem. . . . . ₩ gross $4.50, dis 10 %
Gold Medal. . . . . ₩ gross $6.00, dis 25 %
"Mirror". . . . . ₩ gross $6.00, dis 5 %
Ruby. . . . . ₩ gross $3.75, net
Rising Sun. . . . . ₩ gross $5.75, net
Dixon's Plumbago. . . . . ₩ lb 8c. net

Squares.
Steel. . . . . dis 50 %; full cases, dis 50&10 % } 2 %
Iron. . . . . dis 40 %; full cases, dis 50&10 % } cash
Nickel Plated. . . . . add $2.50 @ $4.00 ₩ doz, net }
Try Squares and T Bevels. . . . . dis 45&10 %
Star Try Squares and Bevels. . . . . dis 35 %
Disston's Try Squares and T Bevels. . . . . dis 50 %
Winterbottom's Try and Mitre. . . . . dis 20&10 %

Tacks, Brads, &c.
List of Oct. 21, 1879:
Tinned Swedes Tacks. . . . . dis 35 %
Tianed American " . . . . . dis 45 %
Swedes Tacks, all kinds. . . . . dis 20 %
Copper Tacks and Nails. . . . . dis 25 %
Swedes Hungarian Nails . . . . . dis 20 %
American " " . . . . . dis 20 %
Gimp and Lace Tacks. . . . . dis 20 %
Finishing Nails. . . . . dis 15 %
Trunk and Clout Nails. . . . . dis 15 %
Common and Patent Brads. . . . . dis 10 %
Basket Nails . . . . . dis 15 %
Brush Tacks. . . . . dis 10 %
Leathered Carpet Tacks. . . . . dis 20 %
American Cut Tacks. . . . . dis 20 %
Cigar Box Nails. . . . . dis 20 %
Chair Nails. . . . . dis 20 %
All other Tack List goods. . . . . dis 20 %
Double-Pointed Tacks . . . . . dis 40&5 %
Extra 10 % on all.

Tap Borers.
Common and Ring. . . . . dis 15 %
Ives' Tap Borers. . . . . dis 15&10 %
Enterprise Mfg. Co. . . . . dis 20 %

Tapes, Measuring.
American. . . . . dis 10 %
Spring Tapes. . . . . dis 25&10 %

Thermometers.
Tin Case. . . . . dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion). . . . . dis 20 %
Wood Bottom. . . . . ₩ doz $12.00, dis 33⅓ %
All Iron. . . . . ₩ doz $10.50, dis 40 %
Nashua Lock Co.'s. . . . . ₩ doz $18.00, dis 50 %

Toe Calks.—Winsted. . . . . ₩ lb 9c. dis 5 %

Tinners' Tools and Machines.
Machines (P. S. & W.). . . . . list net
Tools (P. S. & W.). . . . . dis 10 %

Traps.
Game. Newhouse. . . . . dis 30 %
" Newhouse Pattern. . . . . dis 45 %
" Blake's Patent. . . . . dis 30 %
Mouse, Wood. Choker. . . . . ₩ doz holes, 16½c
" Round Wire. . . . . ₩ doz $1.50, dis 10 %
" Cage " . . . . . ₩ doz $2.90, dis 10 %
" Catch-em-alive. . . . . ₩ doz $2.75, dis 10 %
Rat. "Decoy". . . . . per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering. . . . . dis 10 %
Reed's Brick and Plastering. . . . . dis 15 %
Disston's Brick and Plastering. . . . . dis 15 %
Peace's Plastering. . . . . dis 30 %
Clement & Maynard's. . . . . dis 10 %
Rose's Brick. . . . . dis 15 %
Brades' Brick. . . . . dis 30 %
Worrall's Brick and Plastering. . . . . dis 10&15 %
Garden. . . . . dis 45 %

Triers.
Butter and Ch se. . . . . dis 25%

Vises.
Solid Box. . . . . List of July 1, '79. dis 25 %
" "Crown" (A. H. Hilldick) 40 to 100 lb, 15c dis 10 %
" Peter Wrights. 15½c
Parallel, Parker's. . . . . dis 25 %
" Wilson's. . . . . dis 30 %
" Howard's. . . . . dis 25 %
" Merrill's. . . . . dis 20 %
" Sargent's. . . . . dis 30&10 %
" Trenton. . . . . dis 20 %
" Backus and Union. . . . . dis 25 %
" Fisher & Norris. . . . . dis 15&10 %
" Stevens'. . . . . dis 25 %
" Simpson's Adjustable. . . . . dis 25 %
"Farmer" List. . . . . net
Saw Filers, Bonney's. . . . . ₩ doz $24.00, dis 20&10 %
" Stearn's. . . . . dis 20&10 %
" Hopkins'. . . . . ₩ doz $17.50 dis 10 %
Lowell Hand Vises. . . . . dis 20 %
Richardson's Vise and Anvil. . . . . dis 20 %

Washer Cutters.
Smith's Patent . . . . . ₩ doz $12.00 dis 20 %
Johnson's. . . . . ₩ doz $17.00. dis 33⅓ %
Penny's. . . . . ₩ doz $14.00 and $16.00. dis 45 %
Appleton's. . . . . ₩ doz $3.00, dis 20&10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list. . . . . dis 60&10%

Wire.
Brass and Copper. . . . . List of Jan. 15, 1880. . . . dis 10 %
Bright and Annealed. . . . . Nos. 0 @ 18, dis25 @ 27½ %
" " . . . . . Nos. 19 @ 26, dis 35 @ 37½ %
" " . . . . . Nos. 27 @ 36, dis 40 @ 42½ %
Coppered. . . . . Nos. 0 @ 18, dis 20 @ 22½ %
Galvanized, Nos. 0 to 6. . . . . ₩ lb 10c. dis 15 @ 17½ %
" Nos. 7 to 18. . . . . market list, dis 15 @ 17½ %
Tinned, Nos. 0 to 18. . . . . dis 25 @ 27½ %
Cast Steel. . . . . dis 25 @ 30 %
Tinned Broom Wire, Nos. 18 to 25. . . . . dis 37½ @ 40 %
Annealed Fence, Nos. 8 and 9 . . . . . dis 25 @ 27½ %
" Grape, Nos. 10 to 14. . . . . dis 25 @27½ %
Galvanized Telegraph, Nos. 7 to 9 . . . . . ₩ lb 9c
" " Nos. 10 and 11. . . . . ₩ lb 10c
" " No. 12 . . . . . ₩ lb 10½c
Fence Staples. . . . . ₩ lb 7½@ 7½c
" Staples, Galvanized. . . . . ₩ lb 8½ @ 8½c
Stubs Steel Wire. . . . . $7.00 to 8
Japanned Barb Fence. . . . . ₩ lb 14c
Galvanized " . . . . . ₩ lb 15c
Steel Music Wire, Nos. 12 to 27. . . . . ₩ lb $1.25, net
Turner & Seymour Mfg. Co., Picture Wire. dis 80&20 %
Judd's Picture Wire. . . . . dis 80&20 %
Clothes Line Wire, Galvanized. . . . . ₩ coil 50 %
Wire Cloth, green and drab. . . . . ₩ sq. ft, 4½ c net

Wrenches.
American Adjustable. . . . . dis 45 %
Baxter's Adjustable "S," . . . . . list Jan., 1880. dis 20
" Diagonal. . . . . dis 20
Coes 'Genuine. . . . . dis 33⅓ %
" "Mechanics". . . . . dis 33⅓&10 %
" Pattern, Malleable. . . . . dis 65 %
Girard Standard. . . . . dis 40 %
Girard Agl. . . . . 40 %
Davis' Patent Duplex. . . . . new list, dis 25 %
Bemis & Call's Patent Combination. . . . . dis 20 %
" " Merrick's Pattern. . . . . dis 35 %
" " Briggs' Pattern. . . . . dis 25 %
" " Cylinder or Gas Pipe. . . . . dis 40 %
Van Wagoner & Williams' Basin. . . . . per doz $4.50
Aiken Pocket (Bright). . . . . $6.00. dis 60&10 %
The Favorite Pocket (bright). . . . . per doz $3, dis 60 %
Webster's Pat. Combination. . . . . dis 35 %

Wringers.
Peerless, No. 0, no Cogs. $54.00
" No. 1, " 57.00
" No. 2½, with Cogs. 65.00
" No. 2, " 66.00
" No. 3, " 74.00
" No. 4, " 90.00
Unique, No. 0. . . . . 54.00
" No. 1. . . . . 57.00
Universal, XX No. 2½. 65.00
" " No. 3. . . . . 66.00
" " No. 1½. 74.00
" " No. 8. . . . . each. 15.00
Crown No. 1. . . . . 57.00
" No. 2½. 66.00
" No. 3 . . . . . 72.00
Eureka, No. 1. . . . . 60.00
Novelty, No. 10, with Cog Wheels. 63.00
" No. 2, " 66.00
Excelsior, No. A, with Folding Bench. 74.00
" No. E, for Set Tubs. 65.00

Stamped Tinware.—New List Jan. 10, 1880.
Common Stamped Ware. . . . . dis 15 %
Stamped Deep and Retinned Ware. . . . . dis 25 %

NEW YORK WHOLESALE PRICES, MARCH 10, 1880.

METALS.

IRON.—DUTY: Bars, 1 to 1¼c. ₩ lb; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 lbs. Boiler and Plate, 1¼c. ₩ lb.

Pig Iron—AMERICAN

Foundry No. 1	₩ ton	$39.00 @ 40.00
" No. 2X	₩ ton	37.00 @ 38.00
Gray Forge	₩ ton	36.00 @

SCOTCH.

Eglinton	₩ ton	29.50 @ 30.00
Coltness	₩ ton	33.50 @ 34.00
Glengarnock	₩ ton	30.00 @ 31.00
Gartsherrie	₩ ton	30.00 @ 31.00

Rails.

Iron (nominal)	₩ ton	$65.00 @ 68.00
Steel (nominal)	₩ ton	82.50 @ 84.00
Old Rails T's	₩ ton	41.00 @ 42.00

Scrap.
Wrought Scrap, from yard..₩ ton..... 43.00 @ 45.00

Bar Iron, from Store.
Common Iron:
⅝ to 2 in. round and square..... } ₩ lb 3.70
1 to 6 in. x ⅜ to 1 in..... }
Refined Iron
⅝ to 2 in. round and square..... } ₩ lb 4.00
1 to 6 in. x ⅜ to 1 in..... }
1 to 6 in. x ¼ and 5-16..... ₩ lb 4.20
Rods—⅝ and 11-16 round and square..... ₩ lb 4.70
Bands—1 to 6 x 3-16 to No. 12..... ₩ lb 4.70
Norway Nail Rods..... 7 c

Sheet Iron.

	Common American	R. G. American.
Nos. 10 to 20	₩ lb 5 @ 5¼c	6¼c
21 to 24	₩ lb 5¼ @ 5¾c	6¾
25 to 26	₩ lb 6 c	7
27	₩ lb 6¼c	7¼
28	₩ lb 6¾c	7¾

	B.B.	2d qual.
Galvanized, 10 to 20	₩ lb 11 c	10 c
" 21 to 24	₩ lb 12 c	11 c
" 25 to 26	₩ lb 13 c	12 c
" 27	₩ lb 14 c	13 c
" 28	₩ lb 15 c	14 c

Patent Planished..... ₩ lb A. 13c; B, 12c
Russia..... 14@15 c
American Cold Rolled..... ₩ lb 7@7½c

COPPER.—DUTY: Pig, Bar and Ingot, 5c; Old Copper 4c lb. Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.
American Ingot..... ₩ lb See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb..... 34c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft..... ₩ lb 36c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft..... ₩ lb 38c
" Lighter than 10 oz. ₩ sq. ft.. ₩ lb 40c
Circles less than 84 in. in diameter..... ₩ lb 37c
Circles 84 in. diameter and over..... ₩ lb 40c
Segment and Pattern Sheets..... ₩ lb 37c
Locomotive Fire Box Sheets..... ₩ lb 34c
Sheathing Copper, over 12 oz. ₩ sq. ft..... ₩ lb 32c
Bolt Copper..... ₩ lb 34c
Copper Bottoms..... ₩ lb 37c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

14x48..... ₩ sheet 60
All other size Sheets, 2¼c. per square foot.
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Net.

	14x48.	
14 and 16 oz. and heavier	₩ lb 41c	By the case. ₩ lb 40c
12 oz. and lighter	₩ lb 44c	" " ₩ lb 43c
	Boiler Sizes.	
	7 in., 14x52. 8 in., 14x56. 9 in., 14x60.	
14 and 16 oz. and heavier	₩ lb 43c	By the case. ₩ lb 42c
	(And all sizes not over 20 in. wide.)	
	20x60.	
14 and 16 oz. and heavier		₩ lb 45c
12 oz		₩ lb 48c

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis 10%.
Jan. 15, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 3c ₩ lb.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in..... 32c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive..... 37c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive..... 40c
½c. ₩ lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at... 55c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 39c
Printers' Rules..... 47c
Sheets wider than 30 in. and under 40 in..... 49c
" 40 in. and over..... 52c
Circular Sheets, in diam. from 4 in. to 14, inclusive. 42c
" ¼ " over 14 " 30, " .. 47c
" ½ " " 30 " 36, " .. 51c
" ¾ " " 36 " 40, " .. 57c
" 1 " " 40 in..... 61c

LOW BRASS.

4c ₩ lb more than High Brass,
Gilding Metal, 8c ₩ lb more than High Brass.
Platers' or Gold Metal { In Bars..... 50c; Sawed..... 53c; Planed or Polished..... 60c

FOR SLITTING.

Metal in width 2 in. to ¼ in. to No. 28, inclusive, 1c. ₩ lb advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ₩ lb advance.
Metal, inwidth 1 in. to ⅛ hinner than No. 28, 3c ₩ lb advance
Metal, in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ lb advance.
Metal, in width ⅛ in. to ¼ thinner than No. 28, 5c. ₩ lb advance.
Metal, ¼ in. in width and less, 10c. ₩ lb advance.
Any of the above widths cut to particular lengths, add 7c. ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.62	$0.70
6 " " "	68	76
10 " " "	84	.88
15 " " "	.74	1.03
18 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lbs., $2.00 ₩ lb.
Advance 2c. for each additional inch in width above 2 in., and 2c. ₩ lb on each No. thinner than Nos. 26 to 8, inclusive.
All German Silver thinner than No. 36 is Platers, at 50c ₩ lb additional.
German Silver Scrap one-half less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.35	$0.39	$0.45
No. 21	.38	.42	.48
No. 22	.39	.43	.49
No. 23	.41	.44	.50
No. 24	.42	.46	.52
No. 25	.45	.49	.55
No. 26	.47	.51	.57
No. 27	.50	.54	.60
No. 28	.54	.58	.65
No. 29	.57	.61	.68
No. 30	.60	.64	.74
No. 31	.64	.68	.80
No. 32	.68	.72	.86
No. 33	.72	.77	.95
No 34	.76	.80	1.05

Spring Wire 2c ₩ lb advance.
Flat, Square and Half Round Wire 5c ₩ lb advance on Round Wire.
Fancy Wire not less than 10c ₩ lb advance of Round Wire.
Brass Rods, No. 8 and larger not less than 2 feet engths, 40c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 45c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per lb extra for spooling on 1 lb spools.

MISCELLANEOUS.

Brass Pail Ears..... $0.52
Brass Door Rail..... .45

SCRAP.—net.

High Brass Scrap..... 14c
Low " 10c
Gilding..... 18c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 10 % ₩ lb

Plain No. 2 inclusive above ¼ in. to 3 in..... $0.45
" above 3 in..... .55
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cent advance on List for each Number.
Above No. 26, specia rates.
Plain, ¼ inch..... .72
" 3-16 " 1.12
" ⅛ " 1.62
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20..... 52c
English, Scotch and Extra Patterns Fancy Tubing to No. 20..... 57
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—net.

Plain..... .29
Fancy..... .35
Scotch and Extra Patterns..... .38

GERMAN SILVER TUBING.—dis 10 %

4 Per cent	.80
6 "	.90
9 "	1.05
12 "	1.20
15 "	1.35
16 "	1.40
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils, valued at 7 cents ₩ lb., or under, 2½ cents; over, 7 cents, and not above 11, 3 cents ₩ lb; over 11, 3½ cents ₩ lb, and 10 % ad val. Railway Bars, 1¼ cents ₩ lb. Railway Bars, in part Steel, 1 cent ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

Tool	12½c
Spring	5c
Homogeneous	8c
Boiler Plate	8c
Tire	5c
Machinery (round and square)	7c
File	8½c
Sheet	9 @ 14c
Saw Plate, mill and mulay	11c
" gang and X cut	12c

English Steel.—

Best Cast	₩ lb 15½c
Extra Cast	₩ lb 16½c
Round Machinery, Cast	₩ lb 10c
Swaged, Cast	₩ lb 18c
Best Double Shear	₩ lb 15½c
Blister, 1st quality	₩ lb 13c
German Steel, Best	₩ lb 11c
" 2d quality	₩ lb 10c
" 3d quality	₩ lb 9c
Sheet Cast Steel, 1st quality	₩ lb 15½c
" 2d quality	₩ lb 14½c
" 3d quality	₩ lb 12½c

ANTIMONY..... .20@21c

LEAD.—DUTY Pig $2 ₩ 100 lbs; old Lead, 1½c lb ₩ Pipe and Sheet, 2½c ₩ lb.

American	6¼ @ 6¼c
Bar	7¼c dis 10 %
Pipe	8½c. dis 10 %
Tin Lined Pipe	14c. dis 10 %
Sheet	9c. dis 10 %
Shot	Drop 9½c, Buck, 10½c, dis 10 %
Chilled Shot	10½c, dis 10

BABBITT METAL.

N. P. U..... ₩ lb @ 80
A 20c; B, 16c; C, 12c.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ lb; Electro-galvanized Plates, 2c ₩ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	₩ lb 28c @
Straits	₩ lb 25c @
English	₩ lb 24@ @

TIN PLATES.

I C 10x14 } 14x20 }	Prime Charcoal	$10.00
I C 12x12	"	10.25
I X 10x14 } 14x20 }	Charcoal	12.00
I X 12x12	" "	12.25
D C 12½x17		9.50
D X 12½x17		11.50
For each additional X add		2.00

COKE TIN PLATE.

	Best.	2d quality.	Ordinary
I C 10x14 } I C 14x20 }	$8.25 @	8.50 @ 8.75	8.00 @ 8.25
I C 12x12	9.50	8.75 @ 9.00	8.25 @ 8.50

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	9.00 @	8.75 @	8.25 @ 8.50
I X 14x20	11.00 @		
I C 20x28	18.50 @	18.00 @	17.00 @ 17.50
I X 20x28	22.50 @		
I C 20x300	@ 26.00		
I C 14x20 M. F. Brand			10.50 @ 10.75

SOLDER..... No. 1, 14c @ 15c; No. 2, 13½.

SPELTER—DUTY: in Pigs, Bars and Plates, $1.50 ₩ 100 lbs.

American, cash	6¾c
Bergen Port from Lehigh Ore	10c
Lehigh, on spot	9c

ZINC.—DUTY: Pig or Block, 1.50 ₩ 100 lbs. Sheet, 2½c ₩ lb.

Sheet, Cask	8¾ @ 8¾
" Open	9 @ 9¼

Paper Stock, &c.

(Dealer's Selling Price.)

Canvas linen	@ 5
White cotton, new	5½ @
" No. 2	3½@
White linen rags No. 1	@ 6¼
" " No. 2	4½ @
Seconds	3 @
Soft woolens	17 @
Gunny bagging	3½ @ 3¾
Jute Butts	3 @ 3¼
Kentucky bagging	4½@
Waste paper and scraps	1 @
Rope cuttings	1½ @ 3
Kentucky bale rope	4 @ 4½
Grass rope	3½ @ 3¾
Tarred shaking	1¾ @
Hard White Shavings, No. 1	3½ @ 4¼
Soft " " No. 1	3½ @ 4
White Shavings, No. 2	4 @
Mixed " part white	3½ @
Imperfections, No. 2, best folded sheets	3¼ @
" No. 1, Heavy Stock	3½ @
Book Stock	2¾ @ 3
" " Heavy	3¾ @
" " Light	1½ @ 1¾
Newspapers	2½ @ 3¼
Prints	1½ @
Pure Manilas	3 @ 3¼
Bogus Manilas and Hardwares	$1.50 @
Commons	70 @
Binders' Board Cuttings	85 @
Straw Board Cuttings, clean	80
Woolen Tailor Clips	18 @ 19
Satinet "	2½ @ 3½

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb 20c
" " Ordinary	6c
" Ivory Drop, fair	12 @ 15c
" best	25c
Black Paint, in oil	kegs 8c asst'd cans, 11c
Blue Prussian, fair to best	40 @ 55c
" " in oil	45 @ 55c
Blue Chinese dry	8@c
" Ultramarine	18 @ 30c
Brown, Spanish	1¼c
" Van Dyke	10@12c
Carmine, 40	combination price
Green, Chrome	15 @ 23c
" in oil	14 @ 18 @ 24c
" Paris	good 25c; best, 30c
" in oil	" 30c; 45c
Iron Paint, Bright Red	₩ lb 2½c
" Red	₩ lb 2c
" Brown	₩ lb 3c
" Purple	₩ lb 3c
" Ground in Oil, Bright Red	₩ lb 5½c
" " " Red	₩ lb 5c
" " " Brown	₩ lb 4½c
" " " Purple	₩ lb 6c
Mineral Paints	1¼ @ 4c
Orange Mineral	10c
Red Lead, American	7½@
" English	None in market
" Venetian (N. C.) dry	$1.65 @ $1.70
" " in oil	asst'd cans, 11c; kegs, 8c
" Indian dry	9 @ 12c
Rose Pink	10 @ 13c
Sienna, American, Raw	4c
" Burnt	4@c
" " in oil	12 @ 16 @ 20c
" Raw	11 @ 15 @ 25c
Umber, Burnt	4 @ 8c
" in oil	9 @ 12 @ 16c
" Raw	3½ @ 7½c
" " in oil	10 @ 16 @ 18c
Vermillion, Chinese	90c
" English	60 @ $2.50c
" Trieste	1.10c
" American, Common	14c
White Lead, American, pure dry	6 to 7c
" " in oil	9 to 9½c
White, Paris, English, prime	in bbls. 2 @ 2½c
Yellow Ochre, French	$1.75
" " in oil	asst'd cans, 11c; kegs, 8c
" " Vermont	in casks, 1½c
Yellow Chrome	17 @ 27c
" " in oil	14 @ 18 @ 24c
Zinc White American No. 1, dry	5 @ 5½
" No. 1, in oil	9c
" French (Paris)	8 @ 10c
" in oil	@ 10c

Oils.

Linseed, Raw, in casks and bbls	₩ gal. 84c & 86c
" Boiled, " "	90c & 91c
Bleached Whale	₩ gal. 65c
" Sperm	₩ gal. $1 18
" Elephant	66c
Signal	05@
Prime Lard	64c
No. 1	59c
West Virginia	10c @ 22c
Drilling	40c
Empire Cylinder	54c
Miners' Oil	40 to 50c
Fish Oil, pressed	46c
Neatsfoot	80c
Tallow	6½c
Machinery	40c
Engine	50c

Sundries.

Asphaltum	₩ gal 9c
Benzine	₩ gal 18c
Chalk	3½c
" Block	3½c
Dryer, Patent, Am'n	ass't cans, 10½c; keg, 9c
Frostings	50c
Glue, White	33 @ 40c
" Sheet	20c
Glaziers' Points, Zinc	8c
Gum, Copal	36c
" Damar	25c
" Shellac, English	18c
" " dark	42c
Litharge, English	7½c
Mineral Wool	₩ lb 1¾ @ 1½c
Pumic Stone, selected Lumps	4 @ 6c
" powdered	2½c
Putty, in bladders	3 c
" in bulk	2½c
Rotten Stone, soft, English	—
Spirits Turpentine	48c
Whiting Spanish	3½c

Glass.

FRENCH WINDOW GLASS.
Prices current per box of 50 feet.

Single Thick.—Discount 40 & 10 to 50 %

SIZES.	1st.	2d.	3d.	4 th
6 x 8 to 10 x 15	$ 8.00	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.75	8.00	7.50	7.00
18 x 22 to 20 x 30	11.25	10.50	9.75	8.75
15 x 36 to 24 x 30	12.75	11.50	10.00	
26 x 28 to 24 x 36	13.50	12.25	11.25	
26 x 36 to 26 x 44	14.75	13.75	11.75	
26 x 46 to 30 x 50	16.25	15.00	13.00	
30 x 52 to 30 x 54	17.25	16.00	13.50	
30 x 56 to 34 x 56	18.75	16.75	15.00	
34 x 58 to 34 x 60	19.40	18.00	16 00	
36 x 60 to 40 x 60	21.00	19.40	18.00	

Double Thick.—Discount 60 %

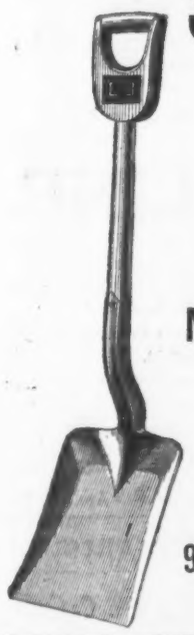
SIZES.	1st.	2d.	3d.	4 th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$ 9.25
11 x 14 to 16 x 24	14.75	13.75	12.75	11.75
18 x 22 to 20 x 30	19.00	17.75	16.00	
15 x 36 to 24 x 30	21.90	19.25	16.50	
26 x 28 to 24 x 36	23.00	20.75	18.25	
26 x 36 to 26 x 44	25.00	23.00	19.25	
26 x 46 to 30 x 50	27.00	25.00	21.25	
30 x 52 to 30 x 54	28.50	26.00	22.25	
30 x 56 to 34 x 56	30.00	27.75	24.75	
34 x 58 to 34 x 60	31.75	30.00	27.00	
36 x 60 to 40 x 60	35.00	32.50	30.25	

Sizes above 40 x 60—$10.00 per box extra for every five inches.
An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches will be charged in the 84 united inches bracket

GROOM SHOVEL CO.,

MANUFACTURERS OF SUPERIOR

SHOVELS, SPADES AND SCOOPS.



SPECIALTIES:

Mining Shovels, Hammered Solid Steel Railroad Shovels and Spades, Locomotive & Sand Scoops.

OFFICE, 912 Washington Ave.,

FACTORY, 1031 North Main St.,

SAINT LOUIS, MO.

COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

Hardware Manufacturers' Warehouse.

Forsyth's Patent Roller Skate. Patented Feb. 12, 1878.

Office and Warehouse of Union Hardware Co.; New Haven Tool Co., Draw Knives, Chisels, &c.; Deuse Bros., Bits, Corkscrews, &c.; Richardson Bros., Saws of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price, Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron; Cowles Hardware Co., Screwdrivers, Mincing Knives, &c.; Rider, Wooster & Co., Anti-Friction Barn Door Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden Knife Co., Pocket Cutlery; American Screws; N. Y. Anti-Friction Metal Co.'s Babbitt Metals; Howard, Razor Strops; C. Forschner, Spring Balances; P. Lowentraut & Co., Dividers, Calipers, &c.; Shepard Hardware Co., Fluters, Blind Hinges, &c.; Saxton & Amedon, Braces, all kinds; Bevin Bros. Mfg. Co., Bells, all kinds; H. H. Parsons & Bro., Pliers, Nippers, &c.; C. L. Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.

T. G. CONWAY, 90 Chambers Street, New York,

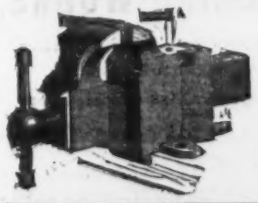
Sole Agent for

THE RED JACKET REVOLVER,

Rupertus' Revolvers, Breech-loading Shot Guns and Rifles; Nichols Cutlery Co.'s Table Knives and Forks; Star Cutlery Co.'s Pocket Knives.

Rupertus' Single Breech-Loading Shot Gun, Twist Barrel.

PRENTISS PATENT VISES



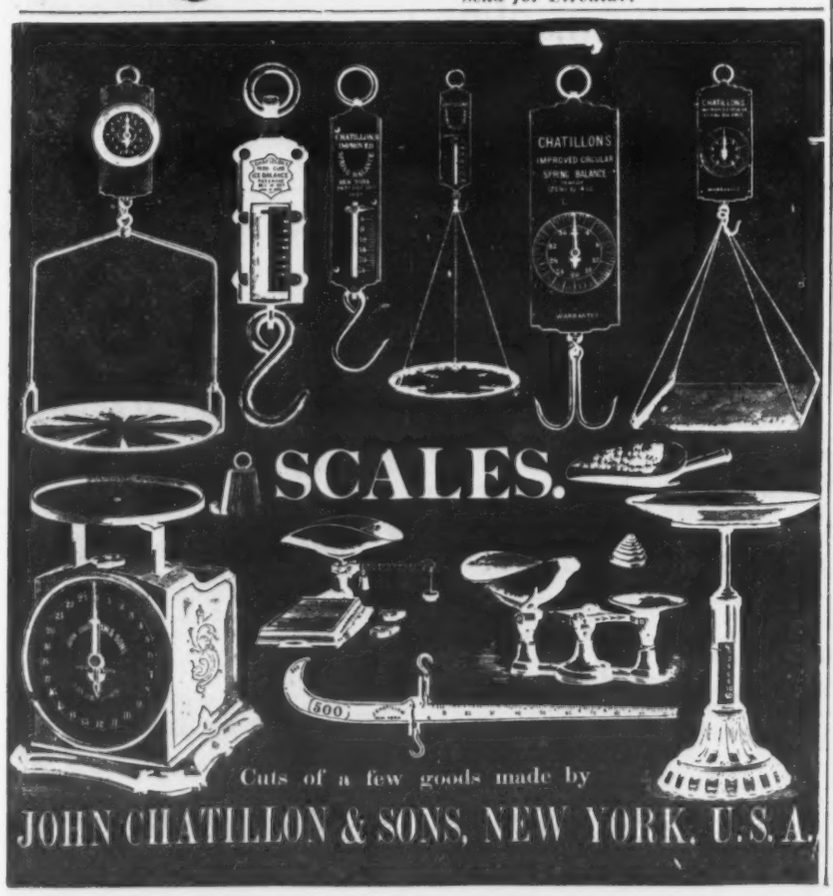
ADJUSTABLE JAWS,

Stationary & Patent Swivel Bottoms

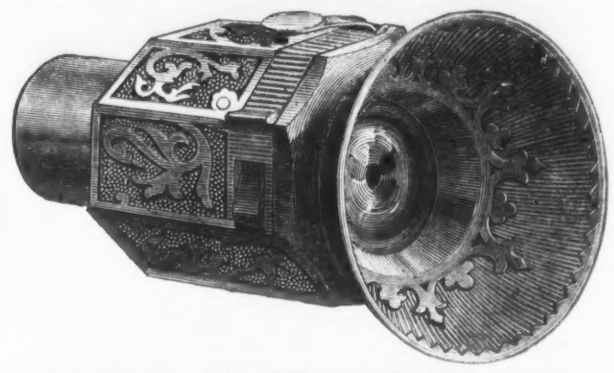
ADAPTED TO ALL KINDS OF VISE WORK.

HALL MFG. CO., 23 DEY ST., NEW YORK.

Send for Circular.



PATENT Elliptic Spring Whistles FOR SPEAKING TUBES. Patented April 25th 1879.



We call the attention of the trade to the whistle for speaking tubes, represented in above cut, as being superior, in a mechanical point of view, on account of the

PATENT ELLIPTIC SPRING,

which is much less liable to break and get out of order than the spiral spring usually used. These whistles being made entirely of metal, are very strong and durable. They are offered in a variety of styles at very reasonable prices. Send for illustrated circular and quotations.

We also invite an examination of our **PATENT REVERSIBLE DOOR LOCKS,** which by their peculiar construction, combine **simplicity, strength and durability.** In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action.

Illustrated catalogues and price lists furnished on application.

TRENTON LOCK AND HARDWARE CO.,

Manufacturers of **Superior Building Hardware.** Trenton, N. J.

AGENTS.

JAMES M. VANCE & Co., 211 Market St., Philadelphia, Pa. ; JAMES MARSHALL, 48 Warren St., New York.

COVERT'S

Patent Improvement in

ROPE GOODS.

No more Splicing or Winding Ends with Cord.

No. 1.

No. 2.

Rope Halters, Horse Ties, Cattle Ties, Halter Leads, &c., made by clamping the lap with steel rings, as shown in cut. Also, clamping the end with a ring to prevent unbraiding.

This is all accomplished by machinery, and a superior article can be made at so much less cost, it will not pay any one to make up goods the old way. We are now prepared to furnish the trade the cheapest and best Rope Halters ever made. No. 1 illustrates the twisted and irregular form of the spliced Halter; also the insecure method of whipping the end with cord, which invariably comes off, and allows the rope to untwist. No. 2 illustrates the New Halter. It is made by clamping the laps with steel rings. The end is also secured with a steel ring, which will remain as long as the rope lasts. We have also a full line of

COVERT'S HORSE AND MULE JEWELRY.

Consisting of Covert's Celebrated Harness Snaps, Swivel Snaps, Open Eye Bit and Chain Snaps, Snap and Thimble for Horse and Cattle Ties, Rope Goods, consisting of Horse Ties, Cattle Ties and Halter Leads, Leather Horse Ties, Breast Chains, Halter Chains, Martingale Chains, Rein Chains, Post Chains, Post Rods, &c. These goods are far superior to anything of the kind on the market. They have from real merit become standard, and never fail to give entire satisfaction. They are sold by all leading jobbers in general and saddlery hardware at manufacturers' prices. Send for illustrated catalogue and price list. Address **COVERT MFG. CO.** Sole Manufacturers, *West Troy, N. Y.*

THE TURNER & SEYMOUR MFG. CO.,

WOLCOTTVILLE, CONN.,

MANUFACTURERS OF

Upholsterers', Stationers' House Furnishing & Fancy

HARDWARE AND NOTIONS.

THE IMPROVED "FAMILY" EGG BEATER
Both Floats revolve, giving the double motion necessary to a perfect Beater.

We take pleasure in calling the attention of the trade to our

Improved Family Egg Beater.

It is made the same as our former Beater, except that we use parallel round wires in place of the flat wire. It is more easily cleaned than the flat wire beaters. It is equal to any beater in the world, while the price is very low. We guarantee that the Improved Egg Beater is not an infringement on the Dover, or any other beater.

Our **Cast Scissors and Shears** are superior in shape, variety and finish to all others. We have added to our former line a great variety of nickel-plated Scissors and Shears, Nut Picks, Nut Crackers, Fruit Knives, &c.

We respectfully solicit the privilege of giving estimates on novelties in Brass or other metals, and on small Iron castings.

SPECIALTIES.

Shade Fixtures in great variety.

Picture Nails, Knobs, Hooks, Cord Wire, &c.

Twine Boxes, Escutcheon Pins, Curtain Rings, Nutmeg Graters.

NORTH'S PATENT

Universal Lathe Dog.

It is very strong. Holds very strong. Will not deface finished work. Holds round, square or irregular work. Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog.

Send for circular.

SELDEN C. NORTH, No. 347 North Fourth Street, Philadelphia, Pa.

EMPIRE FORGES

IMPROVED without Belts, Bellows, Crank Pins, Dead Centers or Back Motion. Send for circular.

EMPIRE PORTABLE FORGE CO., COHOES, N. Y.

PAYSON MFG. CO.,

CHICAGO, ILL.

Perfect Sash Locks,

For Sale by the following Dealers:

FERNALD & SISE, Agents	New York City.
SAM'L G. B. COOK & CO., Agents	Baltimore, Md.
A. T. YOUNG, Agent	Boston, Mass.
HAMILTON & MATHEWS, Agents	Rochester, N. Y
CHAS. HUMES & CO., Agents	St. Louis
WEED & CO.	Buffalo, N. Y
WM. BINGHAM & CO.	Cleveland, Ohio
ABBOTT, MONTGOMERY & STONER	Columbus, "
LEWIS & GODMAN	" "
ROGERS, ENGEL & CO.	Dayton, "
GEO. F. ROHR	" "
T. & A. PICKERING	Cincinnati, "
J. B. SCHRODER	"
TARWATER, SNYDER & RANKINS	Louisville, Ky
ORGILL BROS, & CO.	Memphis, Tenn
VAGEN & NEW	Indianapolis, Ind
THOS. M. CLARK & CO.	Atlanta, Ga
MORRISON, BAIN & CO.	" "
RICE, BORN & CO.	New Orleans, La.
H. J. COOK & CO.	Topeka, Kan.
W. W. DIEHL	Springfield, Ohio.
BOGMAN & VINAL	Boston.
E. T. DUKE	Omaha, Neb.
KURSHEEDT & BIENVENU	"
BLISH, MIZE & SILLIMAN	Atchison, Kan.
D. & C. L. BAUM	Lincoln, Neb.
DUNCAN, WYETH & CO.	Kansas City, Mo.
W. M. WYETH & CO.	St. Joseph, "
SHULTZ & HOSEA	"
W. A. L. THOMPSON	Topeka, Kan
C. A. ROBERTS & CO.	Denver, Co
A. E. FRANZELL	Wheeling, W. Va
JOHN PRITZLAFF	Milwaukee, Wis
A. E. WALLSCHLAEGER & CO.	" "
F. KIECKHEFER & BRO.	" "
J. KNOERNSCHILD	" "
J. MACLAY & CO.	Dubuque, Iowa.
STANDART BROS.	Detroit, Mich.
D. H. JEROME & CO.	Saginaw City, "
JOSEPH WOODWELL & CO.	Pittsburgh, Pa.
J. F. SMITH & BRO.	Galveston, Tex.
GEO. WHALE	Woolwich, London S. E. England.

Also all Dealers in Chicago.

10,000 Sold the First Year.

THE BEST ADJUSTABLE BAG HOLDER In the World.

PRICE ONLY $1.50.

Sent free, on receipt of the price, anywhere in the United States.

It is made of iron, will fit any sack, wide or narrow, and will last a lifetime. Just the thing for the Hardware trade and Agricultural implement dealers. A large discount to the trade and agents. Your orders respectfully solicited, and agents wanted for this best selling article in the market.

Address,

L. JEFF. SPRENGLE,

Sole Manufacturer,

Ashland, Ohio.

Who would do without it for $1.50.

The platform does not go with the holder; it is extra if wanted.

Romer & Co.

Established 1837.

Manufacturers of Patent Scandinavian or Jail Locks, Brass Pad Locks for Railroads and Switches. Also Patent Stationary R. R. Car Door Locks. Patent Piano and Sewing Machine Locks.

141 to 145 Railroad Avenue, NEWARK, N. J.

Illustrated Catalogue sent to the trade on application.

MINERS' CANDLES.

Superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SON,

Nos. 10 & 12 Franklin St., New York.

Coal.

A. PARDEE, Hazelton, Pa. J. G. FELL, Phila.

A. PARDEE & CO.,

303 Walnut St.,

PHILADELPHIA,

No. 111 Broadway, New York.

MINERS AND SHIPPERS OF

Lehigh Coals.

The following superior and well-known Lehigh Coals are mined by ourselves and firms connected with us, viz.

A. Pardee & Co. { HAZLETON, CRANBURY, SUGAR LOAF.

Pardee, Bro. & Co. LATTIMER

Calvin Pardee & Co. HOLLYWOOD.

Pardee, Sons & Co. MT. PLEASANT.

THE HOBOKEN COAL CO.,

Dealers in

SCRANTON, LEHIGH and other COALS

Retail Yard on D. L. & W. Railroad, cor. Grove and 19th sts., Jersey City. Coal delivered direct from shutes to carts and wagons. Families and manufactories supplied with the best qualities of Coal at the lowest rates.

OFFICES: At yard cor. Grove and 15th sts.; cor. Bay st. and Newark av., Jersey City; Room 35, 111 Broadway, N. Y. General Office, Bank Building, cor. Newark and Hudson sts., Hoboken. P. O. Box 247, Hoboken.

B. KREISCHER & SONS,
FIRE BRICK.
BEST AND CHEAPEST.
Established 1845.
Office, foot of Houston Street, East River.
NEW YORK.

NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings
Cylinder Brick, &c., &c.

M. D. Valentine & Bro
Manufacturers of
FIRE BRICK
And Furnace Blocks
DRAIN PIPE & LAND TILE.
Woodbridge, - - - N. J.

BORGNER & O'BRIEN,
Manufacturers
FIRE BRICK
AND
Edge Pressed Furnace Blocks,
CLAY RETORTS, TILES, &c.,
Twenty-third Street,
Above Race, *PHILADELPHIA.*
Twenty years' practical Experience.

PERTH AMBOY TERRA COTTA CO.,
Successors to
A. HALL & SONS, Perth Amboy, N. J.,
ARCHITECTURAL TERRA COTTA
AND
FIRE BRICK.
170 Broadway, NEW YORK.

Brooklyn Clay Retort
AND
FIRE BRICK WORKS.
Manufacturers of Clay Retorts, Fire Brick, Gas House and other Tile, Cupola Brick, &c. Dealers in and Miners of Fire Clay and Fire Sand. Clay bank at Burt's Creek, New Jersey. Manufactory: Van Dyke, Elizabeth, Richards and Partition Sts., Brooklyn, N.Y. Office: No. 88 Van Dyke St.

Watson Fire Brick Manufactory,
ESTABLISHED 1836.
JOHN R. WATSON, Perth Amboy, New Jersey.
Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
Fire Clays, Fire Sand, and Kaolin for Sale.

HENRY MAURER,
Proprietor of the
Excelsior Fire Brick & Clay Retort Works,
Manufacturer of FIRE BRICK, HOLLOW BRICK AND CLAY RETORTS.
WORKS: PERTH AMBOY, NEW JERSEY.
Office & Depot, 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS,
Troy, N. Y.,
JAMES OSTRANDER & SON,
ESTABLISHED 1848,
Manufacturers of
FIRE BRICK,
Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and Dealers in Woodbridge Fire Clay and Sand, and Staten Island Kaolin.

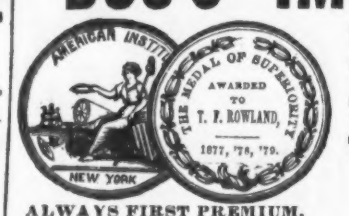
Established 1864.
GARDNER BROTHERS,
Manufacturers of
STANDARD SAVAGE FIRE BRICK,
TILE & FURNACE BLOCKS,
OF ALL SHAPES AND SIZES.
Clay Gas Retorts and Retort Settings, and Miners and Shippers of Fire Clay.
OFFICE: 116 Smithfield St., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

HALL & SONS,
FIRE BRICK,
Buffalo, N. Y.

MILLER'S BRICK PRESSES
(Established 1844),
FIRE and RED BRICK,
And Brickmakers' Tools in General.
AML. P. MILLER & SON,
309 South 5th St., Philadelphia.

RUDOLPH FRANK,
Office, 229 FULTON STREET, NEW YORK.
ALUMINA and SILICA
FIRE BRICKS
Works, BROOKLYN, on the East River.
Through Cars, Canal Boats and Vessels loaded direct from the Works to all points.

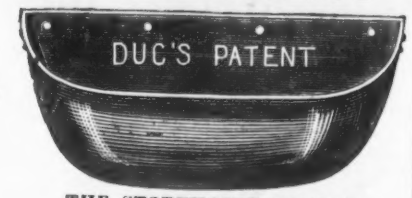
DUC'S IMPROVED ELEVATOR BUCKET.



ALWAYS FIRST PREMIUM.
NO CORNERS TO CATCH.
THROWS FREE AND CLEAR.
200,000 IN USE.
Send for Circular.

THE BEST FOR MILLS.
THE BEST FOR BREWERS.
THE BEST FOR MALTSTERS
THE BEST FOR MINERS.


MILL BUCKET.
In 3½ in. to 10 in.



THE STOREHOUSE BUCKET.
(Partial straight front.)
In 12 in., 14 in., 16 in. and 17 in. Sizes.
Very Durable and Strong.
T. F. ROWLAND, Sole Manufacturer,
BROOKLYN, N. Y.

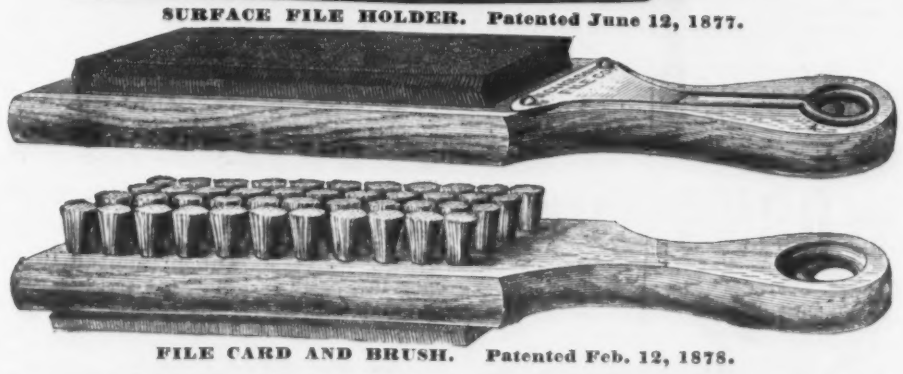
NICHOLSON FILE CO.,
Manufacturers of
FILES AND RASPS.
ALSO
Filers' Tools & Specialties.
Manufactory and Offices at Providence, R. I.
The following space will be used in illustrating our specialties, the matter being changed weekly.

STUB FILES AND HOLDER.
FILES DETACHABLE. Patented June 4, 1878.

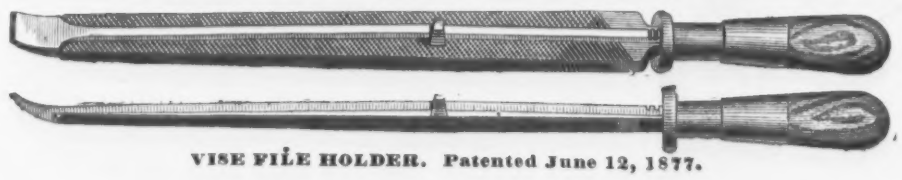
PILLAR. REAPER. PIT SAW. THREE-SQUARE. CABINET.

MACHINISTS' SCRAPERS.

SURFACE FILE HOLDER. Patented June 12, 1877.



FILE CARD AND BRUSH. Patented Feb. 12, 1878.



VISE FILE HOLDER. Patented June 12, 1877.

PURE SILICA FIRE BRICK,
MADE BY THE
Landore Siemens Company,
Specially for OPEN-HEARTH FURNACES.
More "heats" obtained from them than from any other Bricks known.
Imported, to order only, by
PHILIP S. JUSTICE, Sole Agent in United States,
14 NORTH FIFTH STREET, PHILADELPHIA.

Established 1838.
Bevin Bros. Mfg. Co.,
Easthampton, Ct.
Manufacturers of
SLEIGH BELLS,
House, Tea, Hand, Gong Bells, &c.
Bell Metal Kettles.

John T. Lewis & Bros
No. 231 South Front St.,
PHILADELPHIA.

TRADE MARK.
MANUFACTURERS OF
Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil,
AND PAINTERS' COLORS

Brooklyn White Lead Co.

TRADE MARK
White Lead, Red Lead & Litharge.
89 Malden Lane, NEW YORK.
FISHER HOWE, TREASURER.

JOHN JEWETT & SONS
Manufacturers of the well-known brand of
WHITE LEAD.

TRADE MARK.
ALSO MANUFACTURERS OF
LINSEED OIL.
182 Front Street, NEW YORK.

TRADE MARK.
The Atlantic White Lead and Linseed Oil Co.,
MANUFACTURERS OF
White Lead (Atlantic), Red Lead, Litharge & Linseed Oil.
ROBERT COLGATE & CO.,
287 Pearl Street, New York

DUNBAR BROS.,
Manufacturers of
Clock Springs and Small Springs
of every description, from best Cast Steel,
BRISTOL, CONN.

Torrey's Door Springs.
P. R. DUNNE,
Manufacturer,

182 Fulton St.,
NEW YORK.

PIANOS Stool, Cover and Book only $143.75. Organs, 13 Stops, 3 set Reeds, Stool, Book, only $68. Paper free. DAN'L F. BEATTY, Washington, N.J.

PHILADELPHIA.

(Corrected Weekly by Lloyd, Supplee & Walton.)

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₱ lb.....11c net
Over 250 lbs.....11½c net
Eagle (American).....10c ₱ lb—dis 20 %

Apple Parers.
Reading No. 72.....per doz $5.00 net
" No. 74....." 6.00 net
" No. 75....." 7.00 net
" No. 78....." 7.50 net
Peach Parers....." 15.00 net
Little Favorite, corer and slicer.....7.50 net
Lots of 10 to 25 dozen special price.

Axes.
Hunt's Kentucky and Yankee.....per doz $11.00
Mann's Red Warrior....." 11.00
Richland Chief....." 10.00
Beveled Axes.....add 50c " net
Double Bit Axes.....net " 22.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers.....dis 40 %
Cook's Augers.....dis 40&10 %
Watrous' Ship Augers.....dis 15 %
Benjamin Pierce Auger Bits.....dis 35 %
Griswold Auger Bits.....dis 40 %
Cook's " .....dis 40&10 %
Jennings' " .....dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₱ doz..dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ₱ doz....dis 25&10

Balances.
Light and Common.....dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells.....dis 60 %
Swiss Pattern Hand Bells.....low list dis 40&10 %
Connell's Door Bells.....dis 30 %
St. Western & Kentucky Cow, new list.....dis 40 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ⅝ bolt.....each, $7.50
" No. 2, " ¾ " .....9.00 } dis 15 %
" No. 3, " ⅞ " .....12.00 }

Boring Machines.
Upright, without Augers.....List 5 50 } dis 33⅓ %
Angular, without Augers....." 8.75 }
Bolts.—Eastern Carriage Bolts.....dis 60 %, cash
Philadelphia.....new list dis 50 %
Stanley, Wrought Shutter.....dis 40 %
Braces.—Barber's.....dis 40&5 %
Backus.....dis 50 @ 50&10 %
Spofford.....dis 50&5 %
American Ball.....dis 50 %
Butts.—Cast Fast Joint, Narrow.....dis 10&10 %
" " Broad.....dis 20&10 %
Cast Loose Joint, Narrow.....dis 25&10 %
" " Broad.....dis 25&10 %
" Acorn, Loose Pin.....dis 25&10 %
" " Jap'd.....dis 35&10 %
" Mayer's Loose Joint.....dis 25&10 %
Wrought Loose Pin.....dis 35&10 %
" Table Hinges and Back Flaps...dis 25&10 %
" Narrow, Fast.....dis 25&10 %
" Loose Joint.....dis 25&10 %

Blind Butts.
Parker.....dis 50&10 %
Clark.....dis 50&10 %
Shepard.....dis 50 %
Lull & Porter.....dis 55&10 %
Huffer's.....dis 35&10 %
Chains.—German Halter and Coil. new list Oct. 22, 1879.....dis 25 %
Galvanized Pump.....₱ lb 11c net
Best Proof Coil Chain—English.
₱ lb..... 13 11½ 9¼ 8½ 8 7¾ gold
3-16 ¼ 5-16 ⅜ 7-16 ½ in.

Chisels.—Socket Framing.....dis 55&10 %
Socket Firmer.....dis 55&10 %
Butcher's.....$5.00 to $ gold
Casters.—Bed.....dis 15&10 %
Plate.....dis 15&10 %
Coffee Mills.—Box and Side, new list Jan. 1, 1880.....dis 35 %
Enterprise.....dis 15 %
Cutlery.—Walden Pocket.....new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices not.

Drawing Knives.
Hart Mfg. Co.'s.....dis 55&10 %
Adjustable Handle.....dis 15 %

Fry Pans.
Tinned.....dis 45 %
₱ doz.$3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00
No.... 0 1 2 3 4 5 6 7 8
Burnished.....dis 45 %
₱ doz.$3.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
No.... 0 1 2 3 4 5 6 7 8

Files.
Nicholson.....dis 20 %
Disston.....dis 20 %
Butcher.....$4.50 @ 4.75 £
Spencer.....$4.50 @ 4.75 £

Fluting Machines.
Eagle—3¼ in. roll.....each, $2.15, dis 10 %
" —3½ in. roll....." 2.85 net
Crown—4¼ in. roll....." 3.40 }
" —6 in. roll....." 4.00 } dis 10 %
" —9 in. roll....." 6.50 }
Geneva Fluter.....dis 20 %
Favorite com. Fluter & Sad Iron.....₱ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list.....dis 15 %

Hatchets.
Yerkes & Plumb, new list.....dis 15 %
Hunt.....dis 5 %

Hinges.
Strap and T.....dis 25&10 %

Horse Nails.

Auable	Nos. 5	6	7	8	9	10
	30	27	25	24	23	22
" Pol'd & Pt'd and Blued and Pointed.	31	28	26	25	24	23
Globe.....New list.	26	23	21	20	19	18
Clinton	22	20	19	18	17	
" Polished & Pointed	23	21	20	19	18	

Porter, all sizes.....₱ lb 15c. net
Discount on Ausable and Clinton, 20 %; Globe, 10%

Locks and Knobs.
Branford.....dis 30&2 %
Gaylord Cabinet.....dis 10&2 % c sh
American Padlocks.....dis 10&5 % cash
Scandinavian Padlocks.....dis 50 %
₱ doz..$5.00 5.50 6.50 7.50 8.50 10.50 12.50 } dis 50 %
No..... 57 58 59 60 61 62 63 }
₱ doz.....$18.00 26.00 33.00 } dis 50 %
No..... 64 65 66 }

Lanterns.
Square Candle and Oil.....₱ doz
Tubular.....No. 0, $8.65; No. 1, $10.15 ₱ doz net
Guards, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania.....dis 30&10 %
Philadelphia.....dis 30&10 %
Excelsior.....dis 30&10 %

Lawn and Garden Pumps.
Holland Patent.....List $5.00 dis 10 %

Mattocks.
Long and Short Cutter.....new list
Pennsylvania Pattern.....per doz

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 15 %
Stebbins' Gates.....dis 50&10 %
Lincoln's " .....dis 50&10 %
Landers, Frary & Clark's Petroleum.....dis 20&10 %
Brass Liquor Cocks, new list Jan. 1, 1880..dis 25&10 %
Cork Lined " .....dis 70 %

Meat Cutters.—Pennsylvania Meat Cutter..dis 40 %
Dixon's.....dis 10 %
Woodruff.....dis 10 %
Stowe.....dis 10 %
Hale's.....new list, dis 40, 2&10 cash
American.....dis 25 %
Stuffers.....dis 10 %
Enterprise Stuffers.....dis 15 %

Planes.—Ohio Tool Co.....dis 25 %
Scioto.....dis 30 % } 10 % cash
Auburn.....dis 25 % } in 10 days.
New York Tool Co.....dis 50 %
Bailey.....dis 20&10 %
Plane Irons.—Ohio Tool Co.....dis 10&5 %
Butcher's.....$1, $1.50
Plumbs and Levels.
Stanley's Adjustable.....dis 60&10 %
" Non-Adjustable.....dis 60&10 %

Picks.—New list.....
Pumps.—Bickford.....$5.00, dis 10 %
Rules.—Stanley Boxwood.....dis 55&10 %
Stanley Ivory.....dis 45&10 %
Steelyards.—Hart's Pattern.....dis 30&10 %
₱ doz.....$14.50 17.75 21 00 26.50 31 00 35.50
Lbs..... 50 100 150 200 250 300
American Pattern.....dis 30&10 %
₱ doz.....$8.00 10.25 13.75 15.00 16.75 19.50
Lbs..... 50 100 150 200 250 300

Squares.
Steel and Iron.....dis 40 %; full case, dis 50&10 %
Try Squares, Stanley.....dis 45&10 %
Disston's Try Squares.....dis 50 %
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened.....₱ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened.....₱ doz $8.00 net
Saws.—Disston's Hand, Panel and Rip.....dis 20 %
Disston's Circular.....dis 35 %
" Cross-Cut No. 2, Plain Tooth.....dis 20%
" " Patent Tooth.....dis 20%
" " Champion Tooth.....dis 20%
Boynton's Lightning Cross Cut, new list.....dis 20 %
" One Man, all lengths, " .....dis 20 %
" Billet Webs, 30 inch, " .....dis 25 %
" Lightning Buck Saws, cross bar...dis 25 %
" " Hand, Panel and Rip....dis 25 %

Shovels and Spades.
Rowland.....dis 30&20 %
Oliver Ames & Sons. new list.....dis 10 %

Sad Irons.—4 to 10 lbs.....₱ lb 15c
Mrs. Potts' Patent.....dis 20 %

Stone.—Arkansas Oil Stone.....₱ lb $2.00 net
Washita Extra.....₱ lb 27c net
" No 1....." 22c net
" No. 2....." 20c net
" Slips....." 45c net
" Axe....." 18c net
Turkey Oil Stone No. 1.....₱ lb $1.00 net
Hindostan Oil Stone No. 1.....₱ lb 6c }
" Axe Stone....." 8c } dis 30 & 10 %
" Slips....." 10c }
Screws.
Flat Head Iron.....dis 35 %
" Brass.....dis 90 %
Round Head Brass.....dis 15 %
" Iron.....dis 30 %
Spoons.
Plated.....dis 33⅓&5 %
German Silver.....dis 25 %
Britannia, Boardman's.....dis 55 %
" Parker's.....dis 55 %
Tinned.....dis 10 %
Springs.—Torrey.....₱ doz $2.84 net
Philadelphia....5 in., $4.00; 8 in., $7.00 ₱ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $4.00 ₱ doz, dis 33⅓%
Gem Coil No. 1, Large Jap'd.....₱ doz $3.50 }
" No. 2, Medium Jap'd.....2.50 } net
" No. 3, Small Jap'd.....2.00 }
Stocks and Dies......dis 10&5 %
Stove Polish.—Gem.....₱ gross, $4.50, dis 5 %
Dixon....." 6.00, dis 10 %
Onyx....." $4.00 @ 4.25 net
Tacks, Brads, &c......dis 20 %
Shoe Nails—4-8 and larger, 8c; 3½-8, 9c ₱ lb.....net
Double Pointed Tacks.....dis 40&5 %
Traps.
Genuine Oneida—Newhouse.....dis 30 %
Im. Oneida—Newhouse list, first qual.....dis 45 %
Vises.—Solid Box, Trenton new list.....dis 25 %
Wrenches.—Agricultural.....dis 50 %
Coes' Genuine.....dis 33⅓ %
" " Mechanics'.....dis 33⅓&10 %
" " Mail. Bar.....dis 65 %
Philada. Tool Co., Duplex.....dis 25 %
Wire.
Bright or Ann'd, No. 0 to 18.....dis 25&27½ %
" " No. 19 to 26.....dis 35&37½ %
" " No. 27 to 36.....dis 40&42½ %
Coppered, 0 to 18.....dis 20&22½ %
Tinned Broom Wire.....dis 37½ %
Galvanized, No. 7 to 18.....Market List, dis 15&17½ %
Wringers.—Novelty No. 10.....₱ doz $63.00 net
Novelty No. 2....." 66.00 net
Universal No. 2½....." 63.00 net
" No. 2....." 66.00 net
Peerless, No. 2½....." 63.00 net
" No. 2....." 66.00 net

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.

1½ to 4 by ¾ to 1 inch.....4.00
4¼ to 6 by ⅝ to 1 " 4.10
1¾ to 6 by 1⅛ to 1¼ " 4.40
1¾ and 1⅜ by ⅜ to ¾ " 4.10
1 and 1⅛ by ⅜ to ¾ " 4.20
⅝, ¾ and ⅞ by ⅜ to ⅝ inch.....4.40

Rounds and Squares.

1 to 1¾.....4.00 | ⅝ to 9-16.....4.20
2 to 2⅝.....4.20 | ⅜ to 7-16.....4.40
2¾ to 3¼.....4.50 | ⅜.....4.60
3⅜ to 4.....5.00 | 5-16.....4.80
4¼ to 5.....5.50 | ¼.....5.00
¾ to ⅞.....4.10 | 3-16.....7.00

Oval Iron.

⅞ to 1⅛.....4.40 | ½.....4.80
⅝ to ¾.....4.60 | ⅜.....5.20

Half Oval and Half Round.

⅞ to 1¼ inch.....4.70 | ½ inch.....5.50
⅝ to ¾ " .....5.20 | ¾ " 7.00

Horse Shoe.

⅝ to 1⅛ by 5-16 to ⅞ inch.....5.00

Wagon Box Iron.

⅞ Inch, Nos. 13 and 14.....5.20
⅝ " " 11 and 12.....5.00
¾ " " 13 and 14.....5.50
¾ " " 11 and 12.....5.30
⅝ " " 13 and 14.....5.00
⅝ " " 11 and 12.....5.60

Heavy Bands.

3½ to 6 by ¼ and 5-16 inch.....4.20
1½ to 3¼ by ¼ and 5-16 " 4.20
1 to 1⅜ by ¼ and 5-16 " 4.30
⅝ to ⅞ by ¼ and 5-16 " 4.50
⅝ and ⅞ by ¼ and 5-16 " 5.00

Light Bands.

1½ to 6 by ⅛ to 3-16.....4.50
1½ to 6 by Nos. 11 and 12.....4.60
1 to 1⅜ by ⅛ to 3-16.....4.60
1 to 1⅜ by Nos. 11 and 12.....4.70
⅞ and 13-16 by ⅛ to 3-16.....4.90
⅞ and 13-16 by Nos. 11 and 12.....5.00
⅝ and 11-16 by ⅛ to 3-16.....5.20
⅝ and 11-16 by Nos. 11 and 12.....5.30
⅝ and 9-16 by ⅛ to 3-16.....5.50
⅝ and 9-16 by Nos. 11 and 12.....5.60
½ inch by ⅛ and 3-16.....5.80
½ inch by Nos. 11 and 12.....5.90

Hoop Iron.

1¼ to 4, Nos. 13, 14 and 15.....4.80
1¼ to 2, Nos. 16, 17 and 18.....4.90
1¼ to 2, No. 19.....5.00
1¼ to 2, No. 20.....5.10
1¼ to 2, No. 21.....5.20
1¼ to 2, No. 22.....5.30
15-16, 1, and 1¼, Nos. 13, 14 and 15.....5.00
15-16, 1, and 1¼, Nos. 16, 17 and 18.....5.10
15-16, 1, and 1¼, Nos 19 and 20.....5.20
15-16, 1, and 1¼, No. 21.....5.30
15 16, 1, and 1¼, No. 22.....5.40
⅞, Nos. 13, 14 and 15.....5.20
⅞, Nos. 16, 17 and 18.....5.30
⅞, Nos. 19 and 20.....5.40
⅞, No. 21.....5.50
⅞, No. 22.....5.60
13-16, Nos. 13, 14 and 15.....5.40
13-16, Nos. 16, 17 and 18.....5.50
13-16, Nos. 19 and 20.....5.60
13-16, No. 21.....5.70
13-16, No. 22.....5.80
¾, Nos. 13, 14 and 15.....5.40
¾, Nos. 16, 17 and 18.....5.60
¾, Nos. 19 and 20.....5.70
¾, No. 21.....5.80
¾, No. 22.....5.90
11-16, Nos. 13, 14 and 15.....5.70
11-16, Nos. 16, 17 and 18.....5.80
11-16, Nos. 19 and 20.....5.90
11-16, No. 21.....6.00
11-16, No. 22.....6.10
⅝, Nos. 13, 14 and 15.....5.90
⅝, Nos. 16, 17 and 18.....6.00
⅝, Nos. 19 and 20.....6.10
⅝, No. 21.....6.20
⅝, No. 22.....6.30
⅝, No. 23.....6.40
9-16, Nos 13, 14 and 15.....6.10
9-16, Nos. 16, 7 and 18.....6.20
9-16, Nos. 19 and 20.....6.30
9-16, No. 21.....6.40
9-16, No. 22.....6.50
9-16, No. 23.....6.60
½ inch, Nos. 13, 14 and 15.....6.30
⅝ " Nos. 16, 17 and 18.....6.40
⅝ " Nos. 19 and 20.....6.60
⅝ " No. 21.....6.70
⅝ " No. 22.....6.80
⅝ " No. 23.....6.90

The prices under Hoop Iron do not apply to Cotton Ties.
1-10c. per lb. extra will be charged for each gauge lighter than the lightest indicated.
1-10c. per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.
9 to 11 lbs. per set of 6 hoops.....5.00
8 lbs. and less than 9 lbs. per set of 6 hoops.....5.10
Less than lbs. per set of 6 hoops.....5.30

Extras for Cutting to Length all Preceeding Iron.
All Iron, including Tire.....1-10c

Tank Iron.

No. 9 and heavier.....4.80
Plow Slabs.....5.00
" Wings.....5.30

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	5.00	6.50	8.00
No. 15 to 17	5.30	6.80	8.30
No. 18 to 21	5.60	7.10	8.60
No. 22 to 24	5.80	7.30	8.80
No. 25 & 26	6.00	7.50	9.00
No. 27	6.20	7.70	9.20
No. 28	6.60	8.10	9.60

All sheets No. 18 and lighter, over 30 inches wide, not less than 2-10c extra.

Wood's Patent Planished Sheet.
1st quality (A).....13 c | 2d quality (B).....11½c

Galvanized Iron—Juniata.

Nos. 14 to 20.....12c | No. 27.....15c
Nos. 21 to 24.....13c | No. 28.....16c
Nos. 25 and 26.....14c | No. 29.....18c
Discount off list, 7½ %; second quality, 20 % off.

Coal Screen Iron.
4¾ by ⅝ by 5-16.....3.50 | 1 by ⅝ by 5-16.....5.00

Angle Iron.

2½, 3, 3½ and 4 inch.....4.80
1½, 1¾, 2 and 2¼ " 4.80
1¼ inch.....4.90
1 " 5.10
1¼ by 1 inch, for Plow Handles.....5.30
1¼ by ¼ " " 5.30
1¾ by ¼ " " 5.40

T Rail.

8 lbs. to the yard.....4.40 | 20 lbs. to the yard.....4.30
12 " " .....4.30 | 28 " " 4.30
16 " " .....4.30 | 40 " " 4.30

Splice Joints for 12, 16 and 20 lb. Rail, 60c each; 28 and 30 lb. Rail, 80c each; 40 lb. 90c each.
3½ by ⅝ and ⅜ Spikes for 20 and 28 lb. Rail.....5½c
2½ and 3 by ⅜ " " 12 and 16 lb. Rail.....5½c
2¼ by 5-16 " " 8 lb. Rail.....6 c

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ¼ to ⅝ inch.....4.50
1¼ by ⅝ and 7-16 inch.....4.70
1¼ by ⅝, 7-16 and ½ inch.....5.00

Juniata Nail Rods.....8.00
Norway " 9.50
Guard Iron, ¾x⅛x⅜, and ¾x⅛x⅝.....5.50
" ¾x⅛x9-16, and ¾x⅛x¾.....5.70
Drag Bars.....4.80
Dropper Bars.....5.30
Cylinder and Landside Iron.....4.70
Plow Beam Iron.....4.50

Nails.
10d to 60d.....$5.25

Best Refined Cast Steel.
Square, Flat, Octagon and Round.

⅜ to 2 in.....12c | 7-32 and 4¼ 5 in.....14c
5-16 and 2¼ to 3 in.....13c | 3-16 and 5¼ to 6 in.....17c
¼ and 3⅛ to 4 in.....14c | 5-32 in.....20c
Shingle and Double Shear Nailers, Knife, Tap, Die, Mill, Pick, Drill—Ordinary sizes.....12c

Machinery Steel.

Ordinary sizes, ⅜ to 2 in., Round, Square, Flat and Octagon.....7c
5-16 and 2⅛ to 3 in.....8c | 3-16 and 5¼ to 6 in.....12c
¼ and 3⅛ to 4 in.....9c | 5-32 in.....14c
Cast Spring Steel. | 1⅛ to 3x5-32 to 3-16 in...7c
1 to 4x¼ to ½ in.....6c | ⅞ to 1¼x5-32 to 3-16 in..8c
7-32 and 4¼ to 5 in.....10c
Bessemer, 1c. per lb. less. Same Classification.
Cut to special lengths, ½c. extra.

Agricultural Steels.

Solid Cast Steel Plow, 4 to 16 by 3-16 to ⅜ in.....7½c
" Iron Center Plow," 4 to 16x3-16 to ⅜ in.....8½c
Soft Steel Center Plow, 4 to 10x3-16 to ⅜ in.....9 c
Landside and Cultivator, C. S., ⅛ in. thick.....8½c
Circular Plow Coulters, 5-32 to ¼ in. thick.....12½c
Scythe Back.....7 c
Fork and Rake.....7 c
Horse Rake Teeth, to length.....7½c
Finger Bar.....7½c
Cornstalk Cutter beveled.....7½c
Planters' Hoe, C. S.....7½c
Hoe, C. S.....6½c

Sheet Cast Steels.

	1st qual.	2d qual.	3d qual.	Bessemer.
10 to 20 gauge	13c.	11c.	9c.	8c.

21 to 26 gauge, 1c. extra for each additional gauge.
Beveled Hoe and Shovel Steel.....9c
" " " " Bessemer.....8c

Rolls and Castings.
Furnace, Floor and Straightening Plates.....3 c
Housings and Castings not otherwise specified.....3½c
Guide Plates.....3½c
Spindles and coupling boxes.....3½c
Sand Rolls and Pinions, large size.....3½c
" " small size.....3½c
Pipe Mill Castings.....4 c
Rolling Mill Castings under 50 lbs.....3 c
Spur and Bevel Wheels, large.....3½c
" small.....4½c
Pulleys up to 30 inches.....4½c
" over 30 inches.....4½c
Engine Castings, light.....4½c
" heavy.....4 c

Chilled Rolls.

6 to 7 in. diam., 7 to 20 in. long.....5½c
8 to 15 in. " 8 to 40 in. " 4½c
15 to 24 in. " 15 to 72 in. " 4½c
24 to 31 in. " 72 to 108 in. " 4½c

Horse Shoes, Etc.—In 100 keg lots.
Juniata Horse Shoes.....per keg, $6.00
" Mule " 7.00
" "Roadster" pattern.....6.25
Steel Toe Calks.....9c per lb., less dis. on quantities

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, in lots of 500 lb and over, 8½c; less than 500 lb, 9c; in 25 and 50 lb Tin Pails, 9½c. ₱ lb over keg price; 12½ lb Tin Pails, 1c ₱ lb over keg price; assorted, 1 to 5 lb, 100 lb Cases, 11c.
Dry White Lead..less than 500 lbs., 8½c; over 500 lbs. 7¾c
Orange Mineral, genuine, in kegs, 10c; in barrels, 9½c
Red Lead, very brilliant, " 7½c; " 7 c
Litharge (Potter's Lead) " 7½c; " 6¾c
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1% per cent. will be allowed, but not otherwise.

Window Glass.
Per Box of 50 Feet.—Discount 50 % on single strength, 50&10 % on double.

Single Strength.

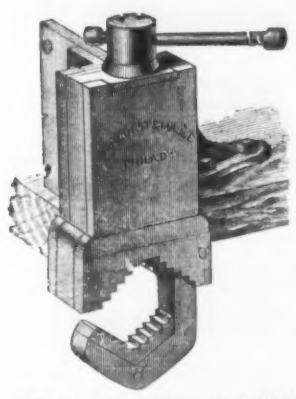
Size.	AA.	A.	B.	C.
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Strength.

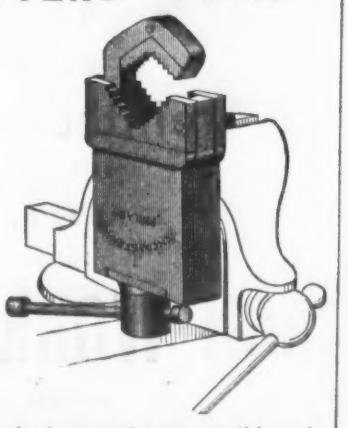
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

IMPROVED PIPE-FITTERS' VISE.



STRONG,
LIGHT,
EFFICIENT,
CHEAP.



To meet the requirements of the large number of persons who have use for such an article, we invite attention to our Improved Pipe Vise. This Vise can be used either as a permanent fixture to work-bench, attached to angle plate or can (unlike others) be held between the jaws of any Machinist's or Blacksmith's Vise; the movable jaw being OPEN ON SIDE permits work to be gripped at any desired point without slipping it in from end, and allows of FITTINGS BEING HELD securely; the Box is made of Malleable Iron, the Screw of Wrought Iron, and the remainder of Solid Steel throughout. The Steel Gripping Jaws can be duplicated and replaced at any time when worn out. It is a very convenient tool, well adapted to the wants of Plumbers, Pump Fitters, Well-Drivers, and all who have use for a tool that is *strong, light, efficient and cheap* which can be readily carried about with kit of tools.

MANUFACTURED BY

PANCOAST & MAULE,

243 and 245 South Third Street, Philadelphia.

Wheeler, Madden & Clemson

MFG. CO.,

MIDDLETOWN, - - - - NEW YORK.

Manufacturers of

WARRANTED CAST STEEL

SAWS

Of every description, including

Circular, Shingle, Cross-Cut, Mill, Hand,

WOOD SAWS, Etc., Etc.

AMERICAN SAW CO.,

Manufacturers of

Movable Toothed Circular Saws,

PERFORATED CROSS-CUT SAWS

And SOLID SAWS of all kinds. Trenton, N. J.

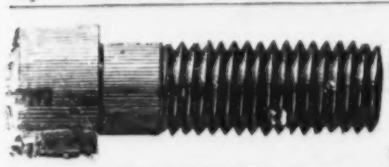
CHUCKS.

MANUFACTURED BY

A. F. CUSHMAN,

Hartford, Conn., U. S. A.

Independent 4-Jawed Chucks, from 6 in. to 24 in. in diameter. Common Lever Scroll Chucks, from 3 in. to 24 in. Patent Geared Chucks, from 3 in. to 12 in. Common Geared, from 2 in. to 12 in. A large variety of Chucks for Amateurs' Foot Lathes. Drill Chucks for all kinds of machines and purposes. Patent Geared Chucks for Hollow Spindle Cutting-off Machines. Bench and portable Centering Chucks, and special chucks made to order. Satisfaction guaranteed. All of the above are from new patterns, with every improvement a long experience can suggest. Send for price list.



TURNED
MACHINE SCREWS,

One-sixteenth to five-eights diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

JOHN FELLOWS,

Successor to LYON & FELLOWS) Factory and Office, *14 Dunham Place, Williamsburgh, N. Y.*

ENTERPRISE Mfg. CO. of PA.

PATENTED HARDWARE MANUFACTURERS & IRON FOUNDERS,

THIRD and DAUPHIN Sts., PHILADELPHIA.

New York Branch House with DURRIE & McCARTY, 97 Chambers Street.

Invaluable IN THE HOUSEHOLD, STORE AND RESTAURANT IN MAKING Fruit Butters, Wines & Jellies.

Invaluable IN MAKING TO THE DRUGGIST Decoctions, Infusions, Syrups, &c.

Enterprise Combination Fruit Press.
Price, $3.50.

SPECIALTIES.

Enterprise Patent Cold Handle Double Pointed
SMOOTHING & POLISHING IRONS
CHAMPION TOBACCO CUTTERS,
PATENT MEASURING FAUCETS,
SELF-WEIGHING CHEESE KNIVES,
&c, &c.

SPECIALTIES.

AMERICAN
COFFEE, SPICE & DRUG MILLS,
SAUSAGE STUFFERS,
FRUIT, LARD and JELLY PRESSES,
CHAMPION DRIED BEEF SHAVERS,
Bung-Hole Borers,
&c., &c.

L. M. RUMSEY & CO.

MANUFACTURERS & JOBBERS OF

PUMPS & FIRE ENGINES,

LEAD PIPE & SHEET LEAD, GAS PIPE & FITTINGS,

RAILWAY SUPPLIES,

NO. 810. N. SECOND STREET,

PLUMBERS & STEAM FITTERS BRASS GOODS, ST. LOUIS, MO. BELTING, HOSE, PACKING &C.

Manufacturers of GALVANIZED PUMP CHAIN FOR CHAIN PUMPS.

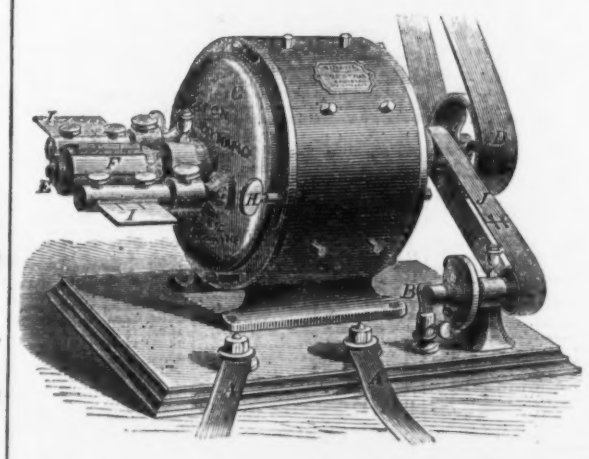
PATENT
Expanding, Self-Draining
RUBBER BUCKET.
Manufactured only by
L. M. RUMSEY & CO.

WESTON DYNAMO-ELECTRIC MACHINE CO.

286 Washington Street, Newark, N. J., U. S. A.,

MANUFACTURERS OF

Machines for Electric Light, Electrotyping and Electro-Plating.



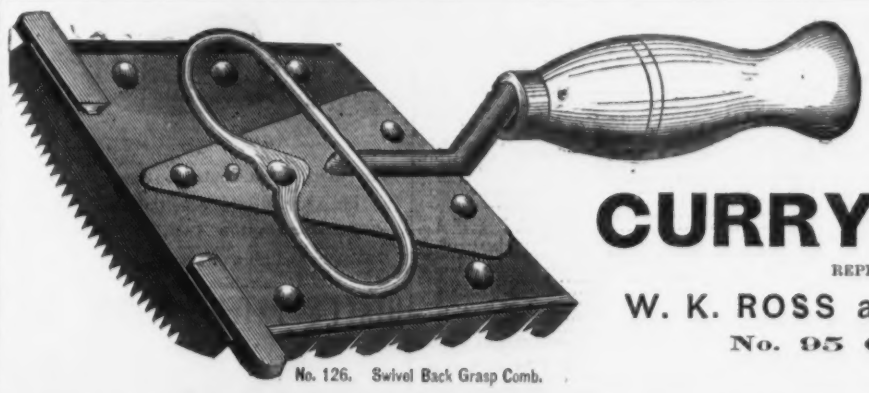
ARE MAKING

THE MOST POWERFUL, SIMPLE AND COMPACT ELECTRIC LIGHT MACHINE IN THE WORLD.

By actual tests this machine has been found to yield more than double the amount of light per horse-power obtained from the best machines built in this country.

Please send full particulars regarding buildings or localities to be lighted, available power, &c.

Centennial Gold Medal American Institute, 1876. Medal of Superiority, American Institute, 1877.
Centennial Medal, Philadelphia, 1876. Paris Medal, 1878.



No. 126. Swivel Back Grasp Comb.

W. P. KELLOGG,

TROY, N. Y.,

MANUFACTURER OF

CURRY COMBS.

REPRESENTED BY

W. K. ROSS and J. A. FULLER,

No. 95 Chambers St.,

NEW YORK.

THE "EAGLE" ANVIL.

LATEST PATENT APRIL 24, 1877.

ESTABLISHED 1843.

SOLD BY

New York—RUSSELL & ERWIN MANUFACTURING COMPANY, DURRIE & McCARTY, TENNIS & WILSON.
Philadelphia—JAMES C. HAND & CO. Boston—GEORGE H GRAY & DANFORTH.
Baltimore—W. H. COLE & SONS, JOHN R. KELSO, Jr.
Louisville—W. B. BELKNAP & CO. Cincinnati—POST & CO. Cleveland—THE LAKE ERIE IRON CO.

WARRANTED!!

Better than the best English Anvil.

Face in one piece, of BEST TOOL CAST STEEL. PERFECTLY WELDED, perfectly true; of hardest temper and never to come off or "settle." It does not bounce the hammer back, and therefore can do more work with lighter hammer. Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in United States fully warranted as above. None genuine without our trade-mark.*

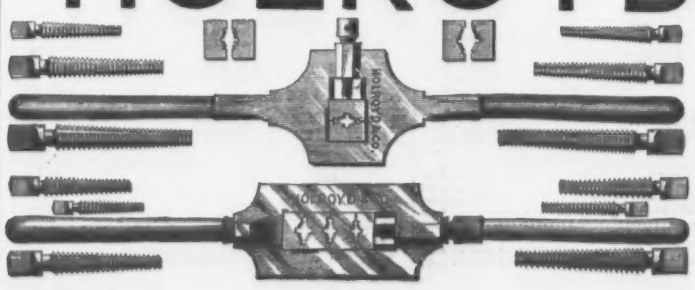
ANVILS weighing 100 lbs. to 800 lbs., 9½ cents per lb., with special discounts to the trade.

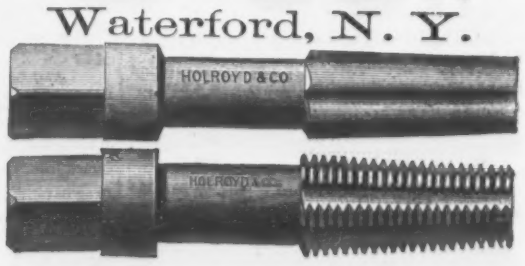
SMALLER ANVILS ("MINIMS").

	No.						
Weighing about	00	0	1	2	3	4	lbs.
	5	10	15	20	30	40	
	$1.75	2.25	2.75	3.25	4.00	4.50	
	No.	5	6	7	8	9	
Weighing about		50	60	70	80	90	lbs.
		5.25	6.00	6.50	7.25	8.00	

HOLROYD & CO.,

Waterford, N. Y.





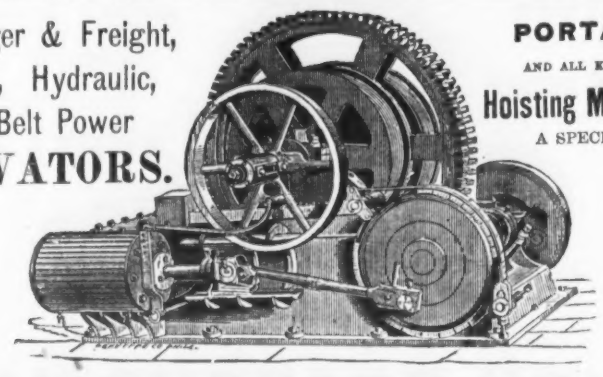
BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American".....₩ ℔ 9½c. dis 20 %
Apple Parers.—Reading Turn Table.....₩ doz $4.00
Goodell Turn Table..... " 5.60
" Improved Turn Table & Push-off " 7.50
" Lightning..... " 6.50
Hudson's Turn Table and Push-off..... " 6.50
Aiken's Tools.....dis 40&10 %
Anvil & Vise.—
No. 1, $6.25; 2, 4.25; 3, 3.50 each.....dis 25 %
Augurs & Bitts.—Snell's Auger.....dis 40 %
L'Hommedieu's Ship Augers.....dis 15 %
Jenning's Bitts.....dis 40&10 %
Cook's Bitts.....dis 40&10 %
Stearns Hollow Augers.....dis 15 %
Shepardson's Double-Cut Bitts.....dis 45 %
" " Gimlets.....dis 40 %
Stearn's Extension Hollow Augers.....per doz $30.00
Bonney's " " " .....per doz 36.00
Pierce's Bitts.....dis 35 %
Griswold " .....dis 40 %
Axes.—Blue Jackets.....per doz 11.00
Red Cross.....per doz 10.00
" Handled.....per doz 10.00
Dowse " Boys'.....dis 30 %
Ax Handles.—
Oak Extra, 31 in., No. A.....₩ doz $2.25
" 34 in., No. A.....₩ doz 2.50
" 31 in., No. B.....₩ doz 1.75
" 34 in., No. B.....₩ doz 2.00
" 31 or 34 in., No. C.....₩ doz 1.25
Axle Clips.....dis 50 %
Balances.—Chatillon's.....dis 15&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....per ft. 4c
" Half-Round.....per ft, ⅝, 6½c; ⅞, 8c
Wrought " .....per ft, ½, 6c; ⅝, 7c; ¾, 8½c
Bells.—Connel's Crank Gong.....dis 30&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879.....dis 33⅓ %
" Brass " 1879.....dis 25 %
Blind Fasts.—Lock Fasts.....₩ C sets $6.00
No. 6 Fasts.....₩ C sets 6.50
Veazie Fasts.....₩ C sets 6.50
Shedd's.....₩ C sets 7.00
Blind Hinges.—Mall. Hook, 3 holes.....₩ C sets 8.50
Brad Awl Handles.—
Phœnix Adjustable.....₩ doz $2.00
Bolts.—Norway Iron Carriage.....dis 40 & 10 %
Common.....dis 10 %
Borax.—Refined.....₩ ℔ 12½c
Boring Machines.—Eagle Upright.....each, $5.75
Eagle Angle.....each, 4.50
Snell Augers.....₩ set 2.70
Braces.—Barber's.....dis 40 %
Spofford's.....dis 40 %
Backus'.....dis 40 & 10 %
Bracket Saws.—Holly Scroll Saw.....each, $2.75
Demas Lathe and Scroll Saw.....6.50
Bracket Saws, extra quality, to No. 4.....₩ gro $0.75
Steel Frame, with patterns.....₩ doz 5.50
Lester.....dis 25 %
New Rogers, all iron.....each, $2.75
Bracket Saw Blades.
Griffith's patent.....₩ gross 7.50
Brackets.—M. H. & B. Flower Pot.....dis 35&10 %
Bronzed Shelf, M. B. & D. new list.....dis 45 %
Store Shelf.....dis 35 %
Bronze Hardware.—Norwalk Lock Co. New list. dis 33⅓ %
Butts.—Union Fast Joint.....dis 10&10 %
" Loose " .....dis 25&10 %
" Japanned Acorn.....dis 30&10 %
" Silvered " .....dis 30&10 %
" Boston Finish.....dis 50&10 %
Union Spiral Spring.....dis 25 %
Wrought Brass.....dis 30 %
Carriage Bolts.—Eagle Norway.....dis 50&10 %
Common.....dis 60 %
Carriage Jacks.
"Climax," No. 1.....₩ doz $18.00
" No. 1½....." 13.00
" No. 2....." 12.00
"Universal".....dis 25 %
" No. 1.....each, $2.00
" No. 2....." 3.00
" No. 3....." 6.00
" No. 4....." 6.00
" No. 5....." 6.50
Cartridges.—U. S. Cartridge Co.....dis 50&10 %
Cards.—Watson's makeHorse and Curry...dis 10 %
" Cotton.....dis 10 %
" Wool.....dis 10 %
Casters.—Bed and Table.....dis 15&10 %
Chain.—Traces 6½, 10, 4, streight.....₩ pair 52c
" 6½, 10, 4, twisted.....₩ pair 60c
" 7, 12, 2, " .....₩ pair 84c
Coil 5-16.....₩ ℔ 13 c
" ⅜.....₩ ℔ 9½c
" 5-16.....₩ ℔ 9 c
" ⅜.....₩ ℔ 8½c
" 7-16.....₩ ℔ 7½c
" ½.....₩ ℔ 7½c
Chalk.—White, Carpenter's.....₩ gross 60c
Red, Carpenter's.....₩ gross 80c
Blue, " .....₩ gross $1.00
Chisels.—Hart, Bliven & Mead, Framing.....dis 45 %
Underhill, Framing.....dis 20 %
Buck's Shank, Framing.....dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each.....₩ doz $4.50
Coat Hods.—"Dover."—Galvanized, new list.dis 40 %
Japanned, new list.....dis 40 %
Coffee Mills.—New list.....dis 35 %
Copper Rivets......dis 25 %
Cocks.—Brass, L. F. & C.....dis 25 %
Cordage.—Manila, usual trade dis 10.....₩ ℔ 14½c
Jute.....₩ ℔ 10c
Cow Ties......dis 25 %
No. 30, 3 ft. No. 6 Wire, with toggle.....₩ doz $1.10
No. 35, 3 ft. " " with snap.....₩ doz 3.00
No. 40, 3½ ft. " " with toggle.....₩ doz 3.40
No. 45, 3½ ft. " " with snap.....₩ doz 4.10
No. 50, 4 ft. No. 4 " with toggle.....₩ doz 4.50
No. 55, 4 ft. " " with snap.....₩ doz 4.70
No. 60, 4½ ft. " 3 " with toggle.....₩ doz 5.50
No. 65, 4½ ft. " 4 " with snap.....₩ doz 5.80

Crow-Bars. Cast Steel.....₩ ℔ 8c
Iron Steel Pointed.....₩ ℔ 6 c
Cutlery.—Pocket, American Shear Co.'s.....dis 40 %
Butcher Knives, "Woods," Lap Bolster Square Handle.....dis 20 %
Steak Knives.....dis 15 %
Lap Bolster, Oval Handle.....dis 15 %
Sticking.....dis 20 %
Skinning.....dis 20 %
Butcher, Common Round Handle, "Woods".....dis 15 %
Shoe Knives, "Woods".....net list
Dividers.—Cook's.....dis 25 %
Dog Collars......dis 20 %
Dog Muzzles.—Automatic.....dis 15 %
Door Springs.—Torrey's Rod.....₩ doz $3.50
Imitation Torrey's Rod.....₩ doz $2.25
Gem Coil.....net list
Crown.....₩ doz $1.50
Warners.....₩ doz $2.25
Door Stops.—"Thurston's".....dis 50 %
Drawer Knobs.—"Thurston's".....dis 50 %
Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %
Emery.—Wellington Mills.....₩ ℔ 10c
Alden's.....₩ ℔ 6c
Turkish in 10 ℔ cans.....₩ ℔ 8c
Enamelled Ware.
Standard Mfg. Co. Kettles.....dis 45 %
" Sauce Pans.....dis 25 %
Felloe Plates.—Wrought.....₩ ℔ 9c
Files.
American File Co.....dis 25 %
Nicholson " .....dis 20 %
Fluting Machines.
Knox list, $1.50.....dis 10 %
American list, $3.40.....dis 10 %
Forks. W. C. & Co., Manure.....dis 40 %
Gimlet Bitts.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz 75c
Glass Cutters.
Combination Glass Cutter and Knife Sharpener.....₩ doz $1.00
Grub Hoes.—K. P. & Co.'s No. 2, 11.50 ₩ doz.dis 15 %
Hammers.—Maydole's.....dis 15 %
Hammond's.....dis 20 %
Hangers & Rollers.—Anti-Friction.....dis 50&10 %
Acme Rollers.....dis 40 %
Climax.....dis 40 %
Common Hangers.....dis 50&10 %
" Rollers.....dis 15&10 %
Hand Screws......dis 10 %
Hatchets.—C. F. Dowse new list.....dis 30 %
Underhill.....dis 20 %
Hay Knives.—Lightning.....₩ doz $18.00 net
Fisher's Patent.....₩ doz @14.00
Hinges.—Strap and T (new list).....dis 25&10 %
Providence Plate.....₩ ℔ 6½c
Wrought Screw Hook.....₩ ℔ 6½c
Hoes.—W. C. & Co.'s.....dis 40 %
Hooks and Staples.—Brewers'.....dis 40 %
Horse Nails. No. 9 7 8 9
National Finished......23 .21 .20 .19....dis 25 %
Putnam Pointed......26 .24 .23 .22.....10 %
Horse Nails.—Bridgewater.....dis 25 %
No. 6, 23; No. 7, 21, No. 8, 20; No. 9, 19.
Ice Cream Freezers.—"Packer's".....dis 33⅓ %
Knobs.—"Norwalk." New list.....dis 33⅓ %
Silver Glass.....dis 50 %
" Bell Pulls.....dis 50 %
Lanterns.—Tubulars, No. 0.....₩ doz 8.05
Beacon Light.....₩ doz 8.00
Railroad, Oil, No. 43.....₩ doz 8.00
Triangular.....₩ doz 4.00
Hurricane.....dis 20 %
Lead.—Sheet.....₩ ℔ 9 c
Pipe.....₩ ℔ 8½c
Locks.—Norwalk Genuine Bronze Goods.....dis 30 %
Eagle Cabinet.....dis 10 %
" Trunk.....list net
W. Wilcox & Co., Padlocks.....dis 10&5 %
American Lock Co.'s Steel Key.....dis 33⅓ %
Metallic Sleeves.—Mann's Patent.....dis 25 %
Manure Forks.—W. C. & Co.....dis 40 %
Mattocks.—K. P. & Co., Long Cutter, 16.00 ₩ doz.
K. P. & Co., Short Cutter, 15.50 ₩ doz.....dis 15 %
" Pick " 16.00 ₩ doz.....dis 15 %
Measuring Tapes.—Eddy's.....dis 10 %
Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's, (New list).....dis 40 %
American.....dis 25 %
Money Drawers.—Tucker's Alarm.....₩ doz $22.50
Mouse Traps.—Delusion.....₩ doz 2.00
Novelty.....₩ doz 1.75
Nails......₩ keg, rates 5.30
Oilers.—Zinc and Tin.....dis 45 %
Brass and Copper.....dis 33⅓ %
Ox Bows.—Extra finished and varnished.....dis 20 %
1¼ in., ₩ doz. pair. $5.75 | 2 in., ₩ doz. pair. $9.00
1¾ in., " " 8.00 | 2½ " " 11.00
Padlocks.—W. Wilcox & Co.'s.....dis 10&5 %
Miller's Brass.....₩ doz $7.50
Paper.—Tarred Sheathing.....₩ ℔ 2 c
Dry Sheathing.....₩ ℔ 2½c
Picks.—K. P. & Co., Adze Eye, 4 to 6 ℔ 12.00.....dis 15 %
" " 6 to 7 ℔ 13.00.....dis 15 %
Planes.—Greenfield Tool Co.....dis 25 %
N. Y. Tool Co.....dis 25 %
English Iron.....dis 30 %
Bailey's.....dis 20 %
Plated Ware.—Rogers & Bro.....dis 33⅓&5 %
Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co..dis 60&10 %
Pocket Knives.
American Shear Co.'s.....dis 33⅓&10 %
Potato Diggers.—W. C. & Co. reduced list...dis 40 %
Pulleys
Acme or Excelsior, 1¾ in.....per doz 38c
" " 2 in....." 42c
Pulley Blocks.....dis 40%
Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 35 %
" Pitcher Spout.....dis 35 %
Copper.....dis 30 %
Rivets.—Black.....dis 30 %
Carriage in 10 ℔ papers.....dis 10 %
Copper.....dis 25 %
Razor Strops.—Torrey's.....Full list
Rules.—Stanley.....Boxwood, dis 15&10 %
" Ivory. dis 45&10 %
Sadirons.—Common.....₩ ℔ 4½c
Laundry.....₩ ℔ 6c
Tailor's Geese.....₩ ℔ 6c
Enterprise, "Potts".....dis 25 %
Sash Locks.—King & Hutchinson's, new list..dis 40 %
Hopkins & Dickinson's.....dis 40 %
Sandpaper.—Baeder & Adamson.....dis 25 %
M. B. & D.....dis 25&5 %
Sash Weights.—Patent Eye.....₩ ℔ 2½c
Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1.....₩ foot 40c
" Champion " .....₩ foot 40c
Disston's, Common " .....₩ foot 44c
" Gt. American " .....₩ foot 44c
Boynton's Lightning " .....₩ foot 50c
M. B. & D., Hand Saws.....dis 25 %
W. M. & Co.'s Circular Saws.....dis 40 %
Richardson Bros.....dis 25 %
Saw Setts.—Spring Lever.....₩ doz $10.00
Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 10 %
Welch & Griffith, Extra.....₩ doz $8.40
" No. 2.....₩ doz 7.00
Scales.—Fairbanks.....dis 25 %
Screws.—Aiken's Flat-Head Iron.....dis 40 %
American Flat-Head Iron.....dis 40 %
" " Brass.....dis 30 %
" Round-Head " .....dis 15 %
" " Iron .....dis 30 %
Grilley " Nickel-plated Piano..dis 15&5 %
" " Common.dis 50 %
Scythes.—Clippers, in boxes.....₩ doz $9.00
Shaves.—Kimball's.....₩ inch 75c
Watrous.....dis 15 %
Shears.—American Shear Co., new list.....dis 70 %
Shot.—Tatham's.....₩ ℔ 9½c
Shovels.—O. Ames, new list.....dis 10 %
O. Ames, other brands, new list.....dis 10 %
M. B. & D.....dis 10 %
Oxford, Birmingham Pattern.....dis 45 %
Sinks.—Magee Patent.....dis 25 %
Snow Shovels.—Malleable tips.....₩ doz $5.00
Skates.—Union.....dis 25 %
Acme.....dis 20 %
Stock and Dies.—King's.....dis 10&5 %
Tacks.—A. Field & Son's.....dis 20&10 %
Pittsfield.....dis 20&10 %
Swedes Tinned.....dis 25&10 %
Swedes Iron.....35&10 %
Gimp and Lace.....20&10 %
Copper Tacks.....25&10 %
All balances on list.....20&10 %
Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 50 %
Blake's.....dis 40 & 5 %
Tree Scrapers.—No. 1.....₩ doz. $2.00
No. 2.....₩ doz 3.00
No. 3.....₩ doz 4.00
Vises.—Simson's Adjustable.....dis 25 %
Howard Vise Co.....dis 20 %
Prentiss'.....dis 20 %
Weather Strips.—Packer's.....₩ doz $4.50
Browne's Flexible Rubber.....dis 40 %
In 20 feet boxes; No. 1, ½ in. wide, ₩ yard, 10c.; No. 2, ⅝ in., 12c.; No. 3, ¾ in., 20c.; No. 4, 1 in., 24c
Valentine's Felt Moulding.....dis 30 %
Black Walnut Spring Weather Strips.....₩ doz. $3.00
Window Springs......dis 20 %
Babcock's No. 3.....₩ gross $6.00
" " 4.....₩ gross 4.15
Wire Cloth.—"Clinton".....₩ ft. 3½c
Wire Goods.—Gate Hooks and Eyes, &c., new list.....dis 40&10 %
Wrenches.—A. G. Coe's.....dis 33⅓ %
Girard Mfg. Co.....dis 33⅓&10 %
Girard Agt.....dis 50 %
Wringers.—Universal, No. 2.....₩ doz $30.00
Universal, No. 2½.....₩ doz 37.00
Novelty, No. 10.....₩ doz 53.00
" No. 2.....₩ doz 66.00
" No. 22.....₩ doz 70.00
Excelsior, No. A.....₩ doz 78.00
" No. B.....₩ doz 86.00
" No. CC.....₩ doz 98.00
Novelty Set Tub, E.....₩ doz 99.00
Eureka.....₩ doz 57.00
Keystone, Wood Frame No. 1½.....₩ doz 54.00
" Iron Frame No. 2½.....₩ doz 54.00
Zinc......₩ ℔ 8½c
Withington, Cooley & Co.—Hoes, Rakes, Forks, &c. dis 40 %. Special rate for Export.

Passenger & Freight,
Steam, Hydraulic,
and Belt Power
ELEVATORS.

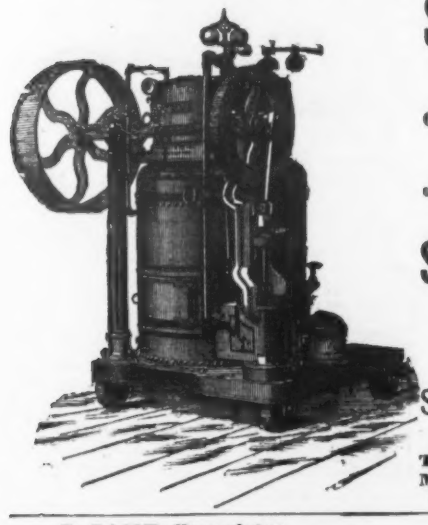


PORTABLE
AND ALL KINDS OF
Hoisting Machinery
A SPECIALTY.

IRON FURNACE HOIST,

For Handling Stock to Top of Stack with One or Two Platforms.

STOKES & PARRISH, 3001 Chestnut St., Philadelphia.



SHAPLEY ENGINE.

Patented - - - Feb. 10, 1874.
Reissued June 22, 1875.

Compact, Practical, Durable and Economical.

Acknowledged to be the best in use. This boiler stands unrivaled.

MANUFACTURED BY

SHAPLEY & WELLS,

Binghamton Iron Works,
Binghamton, N. Y.
MANUFACTURERS OF

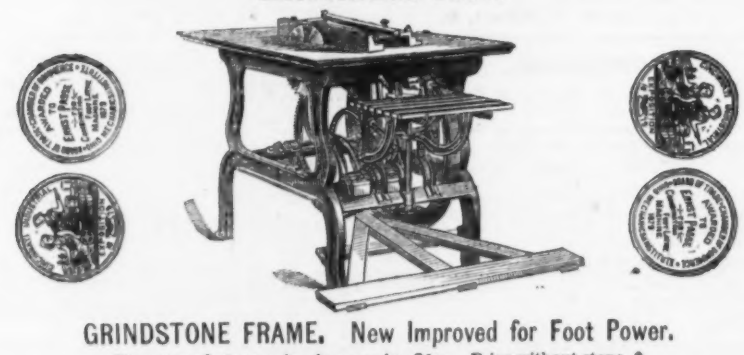
Stationary Engines and Boilers.

Also **Machinery for Mills** of all kinds and **Tanneries.** Also their celebrated **Bark Mills,** acknowledged to be the best.
Send for reduced price list circular.

E. PASSE, Proprietor **CHAS. PASSE, Superintendent.**

Universal Machine Works,

CINCINNATI, OHIO.
Established 1870.



GRINDSTONE FRAME. New Improved for Foot Power.

Diameter of stone 20 in., $5.00; 30 in., $6.00. Price without stone, $

Foot-Power Wood-Working Machines, for Manufacturers' Purposes, Iron Frames; Rip and Cross-Cut Saws, Scroll Saws, Boring Machines, Turning Lathes, Drill Presses, &c.

Fans for Factory Purposes, Free-Hanging Drill Presses for Heavy Work, Upright and Bench Drills, Single and Double-Headed Frizzers, Tools for Machines of every description.

The excellence of this superior stone cannot be too highly appreciated by Farmers and Manufacturers.

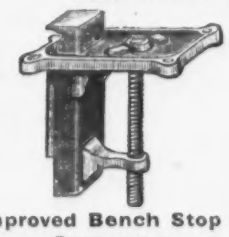
The builders of Reaping and Mowing Machines readily admit and recommend that my Grindstone is best suited for sharpening the knives of such machines. It is portable, light, durable and fast cutting. The frame is made exclusively from hard wood, and every joint is bolted.

Carpenters, Stair Builders, Furniture Manufacturers and Butchers will do well to pay special attention to this tool. It is made for two stones; one for light work, the other for the heaviest grinding.

Parties having Frames and wanting Fixtures can get them on short notice.

TESTIMONIAL.

CINCINNATI, December 17, 1878.
We are using Ernst Passe's Patent Grindstone, and find it to be the most complete and conveniently arranged Grindstone we ever knew of.
MORRIS SASH LOCK M'F'G Co.,
George McGregor, Sup't.



Improved Bench Stop for Carpenters.

All Malleable Iron.

This tool is improved in every particular point. It works by a double-headed screw.

BUCKET PLUNGER STEAM PUMPS

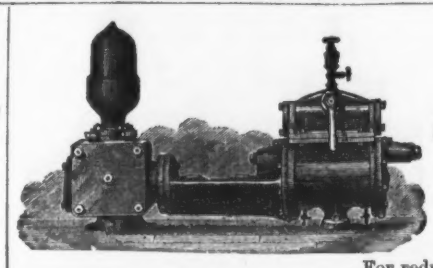
FOR EVERY DUTY.

Valley Machine Co.,
Easthampton, Mass.

THE E. HORTON & SON CO.,

Windsor Locks, Conn.

From this date a discount of 25 per cent will be made from the price list of
THE HORTON LATHE CHUCK,
and 10 per cent from the **Sweetland Improved Chuck.**
February 1, 1880. Send for Price List.



A. S. CAMERON'S

PATENT

"SPECIAL" STEAM PUMP

Is the Standard of Excellence at Home and Abroad.

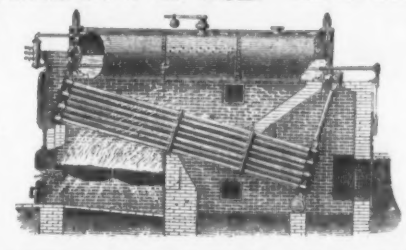
For reduced price lists address **A. S. CAMERON, East 23d Street, New York.**

Babcock & Wilcox Water-Tube Steam-Boiler

OVER 35,000 HORSE-POWER NOW IN USE. ADAPTED FOR ALL PURPOSES.

SAFETY FROM EXPLOSIONS.

In Sections Easy of Transportation.
No Bolted, Screwed or Packed Joints.
All Joints Made by Expanding Wrought Iron Tubes into Bored Holes.
Can be Erected or Repaired by Ordinary Mechanic.



Easily Cleaned from Soot or Sediment.
Adapted to all kinds of Fuel.
Steady Water Line and Dry Steam.
No Leaks from Unequal Expansion.
Rapid Steaming.
Highest Attainable Economy.

CENTENNIAL EXPOSITION MEDAL AWARDED THIS BOILER FOR HIGHEST ECONOMY AND EFFICIENCY ON TEST.

Illustrated Circulars and other desired information promptly furnished. **BABCOCK & WILCOX, Engineers, 30 Cortlandt St., N. Y.**

Bliss & Williams,

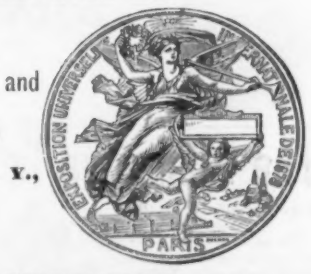
MANUFACTURERS OF ALL KINDS OF

PRESSES and DIES.

Also Manufacturers of
SPECIAL MACHINERY
FOR
WORKING SHEET METALS, &c.
FRUIT & other CAN TOOLS.

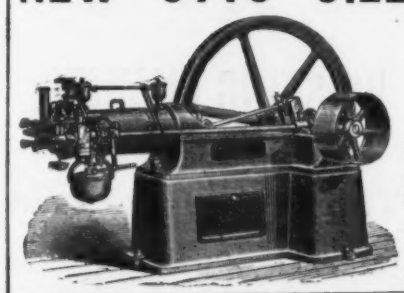
MEDAL AWARDED

Plymouth, Pearl and John Streets,
BROOKLYN, N. Y.,
U. S. A.



PARIS EXPOSITION, 1878.

NEW OTTO SILENT GAS ENGINE.



Working Without Boiler, Steam, Coal, Ashes or Attendance.

Started Instantly by a Match, it gives Full Power Immediately.

When Stopped, all Expense Ceases.

No explosions, no fires nor cinders, no gauges, no pumps, no engineer or other attendant while running. Recommended by insurance companies.
UNSURPASSED IN EVERY RESPECT for hoisting in warehouses, printing, ventilating, running small shops, &c.
2, 4 and 7 H. P. and upwards. Built by

SCHLEICHER, SCHUMM & CO.,
Engineers and Machinists,
3045 Chestnut Street, Philadelphia.

Ludlow Valve Mfg. Co.,

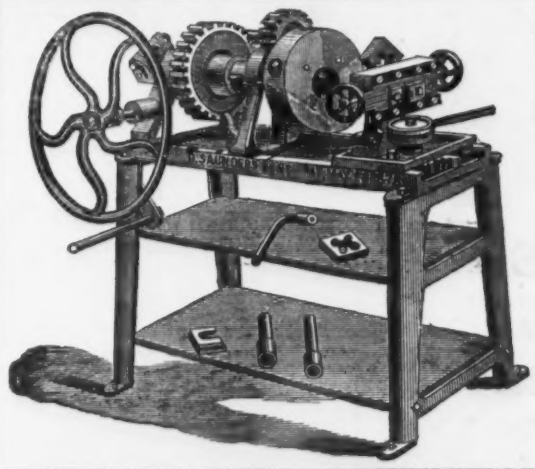
OFFICE AND WORKS:

938 to 954 River St. & 67 to 83 Vail Ave., Troy, N. Y.,

VALVES.

Double and Single Gate, ¼ in. to 48 in.—outside and inside Screws, Indicator, &c for Gas, Water and Steam. Send for Circular.

Also FIRE HYDRANTS.



Saunders' Sons'

NEW

PIPE-THREADING MACHINE,

FOR

Hand or Power,

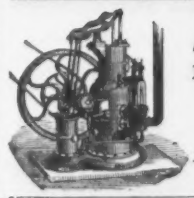
The I X L.

Manufacturers of
Steam and Gas Fitters' Tools,
Pipe Cutting and Threading Machines,
for Pipe Mill use, &c., a specialty.
Yonkers, N. Y.
Send for circulars.

THORNE, DeHAVEN & CO., Drilling Machines,

21st Street, above Market, Philadelphia.

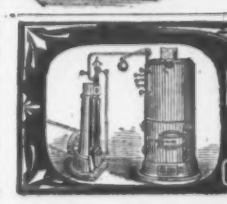
PORTABLE DRILLS. Driven by power in any direction.
RADIAL DRILLS. Self-feed—Large Adjustable Box Table.
VERTICAL DRILLS. Self-feeding.
MULTIPLE DRILLS. 2 to 20 Spindles.
HORIZONTAL BORING AND DRILLING MACHINES.
HAND DRILLS. CAR BOX DRILLS.
SPECIAL DRILLS. For Special Work.



AIR ENGINES. NO WATER. NO ENGINEER.

No extra insurance! Absolutely safe! Simple! Reliable! Durable! Most convenient and economical power known.

SHERRILL ROPER AIR ENGINE CO.,
Manufacturers of Air Engines, Elevators and Hoisting Machinery
91 & 93 Washington Street, New York.



ORAM & ATHERTON

NEW AND SECOND HAND MACHINERY
STAVE MACHINERY A SPECIALTY
OFFICE & WORKS 155-157 RIVER ST CLEVELAND, O.

DEAD-STROKE POWER HAMMERS.

CONSTRUCTION IMPROVED.
Prices Reduced. ***Seven Sizes.***
5 to 250 Pounds.

The 15 and 25 pound sizes are specially adapted for Filemakers' use, the other sizes for general forging.
Send for circular and references.

DIENELT, EISENHARDT & CO.
MAKERS,
1306, 1308, 1310 Howard St., Philadelphia, Pa.

KEYSTONE
Portable Forges,

All sizes, for the lightest to the heaviest work, run by Chain Gear and Flat Belts. Strong blast and durable. Send for Catalogue and Price list to

KEYSTONE Portable Forge Co., 220 Carter St., Philadelphia, Pa.

THE PRATT & WHITNEY CO.,

Hartford, Conn., U. S. A.,

Make specialties of

DROP HAMMERS

Punching Presses, Hand Drilling Machines, Ratchet Drills, Combination Lathe Chucks, Cutters for Teeth of Gear Wheels, Screw Plates, Hand, Machine, Nut and Pipe Taps, Bolt Cutters, &c., &c.

ROCK BREAKERS.

Blake's Patent Expired—End of Monopoly.

The undersigned, sole owners of the old Leviathan, Gates' patent, and the Brown's patent Rock breakers, will guarantee our crushers to break two tons to one of Blake's (or any other.) Send for circulars. Also Stamp Mills and all kinds of Mining Machinery made on short notice.
Office, *52 Canal Street, Chicago, Ill.*
GATES & SCOVILL IRON WORKS.

NATIONAL STEAM PUMP.

Adapted to every possible Duty.

Send for Illustrated Catalogue.

WM. E. KELLY,
New Brunswick, N. J.
New York Salesroom, 40 Cortlandt St.

Machinery, &c.

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in accuracy and durability—the main essentials—we guarantee it shall do more.

Reduced Price List.

OCTOBER 15, 1878.

☞ For dimensions of Governor, see Illustrated Price List.

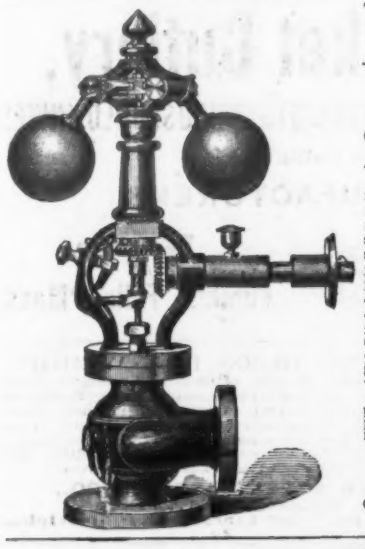
THE JUDSON PATENT

Improved Steam Governor.

Size, Inch.	Plain.	Bright Finished.	Extra for Spe'd'r	Stop Valve.
⅜	$15.00	$17.00	$1.90	....
½	16.00	18.00	1.90	....
1	18.00	20.00	2.00	....
1¼	20.00	23.00	2.25	....
1½	23.00	27.00	2.50	$6.00
2	27.00	31.00	2.75	7.50
2½	36.00	41.00	3.25	9.00
2¾	40.00	46.00	3.75	11.00
3	45.00	52.00	4.25	14.00
3½	54.00	62.00	4.50	17.00
4	64.00	73.00	5.00	21.00
4½	74.00	84.00	5.50	25.00
5	84.00	95.00	6.00	31.00
5½	97.00	109.00	6.50	37.00
6	112.00	125.00	7.00	42.00
7	132.00	146.00	8.00	50.00
8	160.00	176.00	9.00	60.00
9	180.00	198.00	10.00	75.00
10	200.00	220.00	12.00	....

No Charge for Boxing or Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.



THE SHIVE STEAM ENGINE GOVERNOR.

Reduced Price List, Nov. 1, 1879.

Size of Governor	Black	Finished.	EXTRA FOR Ball and Lever.	Speeder.	Automatic Safety Check.	Stop Valve.
¾ in....	$16.00	$18.00	$1.90	$2.25	$.....	$4.00
1 "	18.00	20.00	2.00	2.35	.....	5.00
1¼ "	20.00	23.00	2.25	2.50	.....	6.00
1½ "	23.00	27.00	2.50	2.75	8.00	7.50
2 "	27.00	31.00	2.75	2.75	9.00	9.00
2½ "	36.00	41.00	3.50	3.50	10.00	12.00
3 "	45.00	52.00	4.25	4.25	11.00	17.00
3½ "	54.00	62.00	4.50	4.50	12.50	21.00
4 "	64.00	73.00	5.00	5.00	14.50	25.00
4½ "	74.00	84.00	5.50	5.50	16.00	31.00
5 "	84.00	95.00	6.00	6.50	17.50	37.00
6 "	112.00	125.00	7.00	7.50	19.00	50.00
7 "	132.00	146.00	8.00	9.50	22.00	60.00
8 "	160.00	176.00	9.00	10.00	25.00	75.00

TO ALL WHO USE STEAM POWER.—We will put our Governor on any engine and warrant it to prove superior to all others, and to do all we claim for it. If, after a fair trial, it does not, we will take it off at our own expense. No charge for boxing. Manufactured by

M. C. SMYLIE,

Office, *132 N. Third St., Philadelphia, Pa., U. S. A.*
Works, *Bethlehem, Pa., U. S. A.*

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.

Issues Policies of Insurance after a careful inspection of the Boilers.

COVERING ALL LOSS OR DAMAGE TO

Boilers, Buildings and Machinery,

ARISING FROM

STEAM BOILER EXPLOSIONS.

The Business of the Company includes all kinds of STEAM BOILERS.

Full information concerning the plan of the Company's operations can be obtained at the

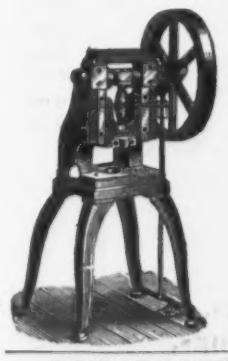
COMPANY'S OFFICE, HARTFORD, CONN.,

or at any Agency.

J. M. ALLEN, Pres. W. B. FRANKLIN, Vice-Pres. J. B. PIERCE, Sec.

Board of Directors:

J. M. ALLEN, President.
LUCIUS J. HENDEE, Pres't Ætna Fire Ins. Co.
FRANK W. CHENEY, Ass't Treas. Cheney Brothers Silk Manufacturing Co.
CHARLES M. BEACH, of Beach & Co.
DANIEL PHILLIPS, of Adams Express Co.
GEO. M. BARTHOLOMEW, Pres't Amer. Nat'l Bank.
RICHARD W. H. JARVIS, Pres't Colt's Fire Arms Manufacturing Co.
THOMAS O. ENDERS, Sec'y Ætna Life Ins. Co.
LEVERETT BRAINARD, of Case, Lockwood & Brainard.
GEN. WM. B. FRANKLIN, Vice Pres't Colt's Pat. Fire Arms Mfg. Co.
GEO. CROMPTON, Crompton Loom Works, Worcester
WILLIAM ADAMSON, of Baeder, Adamson & Co., Philadelphia.
HON. THOS. TALBOT, Ex-Governor of Mass.
NEWTON CASE, Case, Lockwood & Brainard, Hartford
WILLIAM S. SLATER, Cotton Manufacturer, Providence, R. I.
NELSON HOLLISTER, of State Bank, Hartford.
D. R. SMITH, Pres't Springfield Fire & Marine Ins. Co.



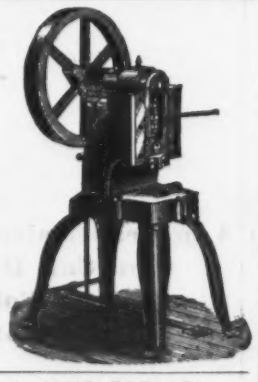
A. H. MERRIMAN,

Patent Power

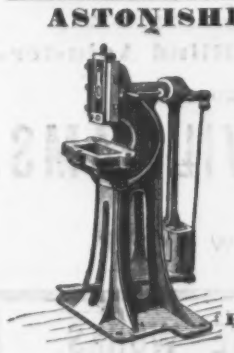
PUNCHING PRESSES.

WEST MERIDEN, CONNECTICUT.

Judges' Report.—"He exhibits a power press, or punch, which is a well-made, substantial machine, and contains several features of marked originality, which materially augment its durability and efficiency."



ASTONISHING POWER in FOOT and HAND PRESSES.



Punching, by foot, *3-4* hole in *5-16* iron 6 inches from edge.

Smaller sizes punch, by foot, *3-8* x *1-4*, and *1* inch by *1-8*, as rapidly as by power presses, at one-half the cost.

Our largest hand machines punch *1* inch hole in *3-8* iron, and shear bar *3-4* x *2* inches at a cut, any length, one man at the lever.

Highest prize, *The Grand Medal of Progress*, has just been awarded us at the American Institute Exhibition.

Our presses can also be run by steam power.

PEERLESS PUNCH and SHEAR CO.,

52 Dey Street, New York City.

LOVEGROVE & CO.,

PHILADELPHIA, PA.,

MANUFACTURERS OF

BOILERS & ENGINES, ALL SIZES.

1-HORSE ENGINE AND BOILER, $150; 2-HORSE, $175; 3-HORSE, $200; 4-HORSE, $300; 5-HORSE, $375; 6-HORSE, $400; 8-HORSE, $475.

WARRANTED THE BEST. SEND FOR CIRCULAR.

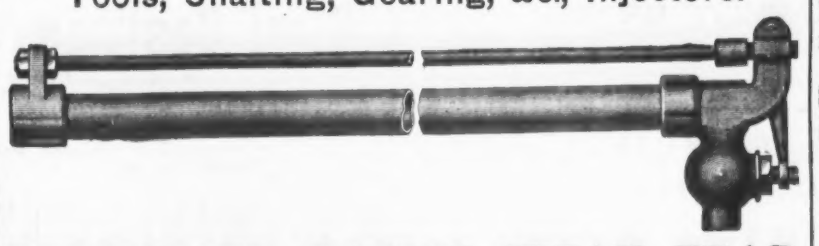
Machinery, &c.

WILLIAM SELLERS & CO.,

PHILADELPHIA,

MANUFACTURERS OF

Iron and Steel Working Machinery, Machinists' Tools, Shafting, Gearing, &c., Injectors.



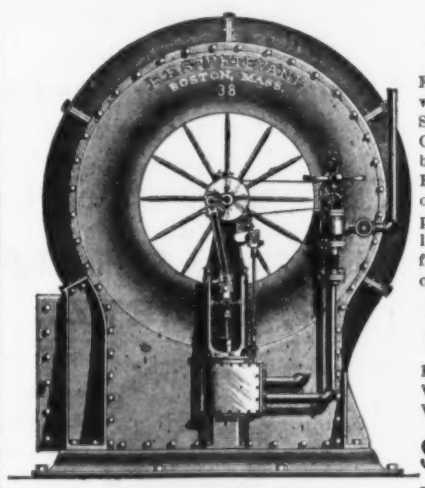
MULTIPLIED MOTION STEAM TRAP.

Suits any Location. Price, $12.

Send for circular giving particulars.

Branch Office, 79 Liberty Street, N. Y.

STURTEVANT BLOWERS & EXHAUST FANS



Sturtevant Patent Steam Fan.

Sturtevant's Patent Steam Fan,

For Blowing Furnaces of all kinds, such as are provided with grate bars; especially adapted for Steam Boilers, Puddling and Heating Furnaces. Coal Screenings and all kinds of refuse coal may be successfully used for fuel by the use of these Fans to create blast. For forcing fresh air into, or taking foul air out from Coal Mines and other places needing ventilation, such as Hospitals, Asylums, Theaters and other Public Buildings, Manufacturing Establishments, &c. Also for numerous other uses where large volume of air is required.

Sturtevant Patent Exhaust Fan,

For removing Shavings and Dust from Wood-Working Machines, Dust from Sand and Emery Wheels, and for Ventilation.

Sturtevant Steel Pressure Blower,

For Cupola Furnaces and Forges. The Blower, which excels all others, produces *maximum* results with *minimum* power. Used in the largest establishments in the country, where the strongest blast is required.

Sturtevant Patent Improved Fan Blower,

For Steam Boilers, Puddling and Heating Furnaces.

Send for Illustrated Catalogue to

B. F. STURTEVANT, Patentee and Sole Manufacturer,
72 Sudbury Street, Boston, Mass.

PRESSES, DROP HAMMERS, DIES,

And Other Tools

FOR THE MANUFACTURE OF ALL KINDS OF

SHEET METAL GOODS,

Drop Forgings, &c.

THE STILES & PARKER PRESS CO.,

Middletown, Conn.

LANE & BODLEY CO.,

MANUFACTURERS OF

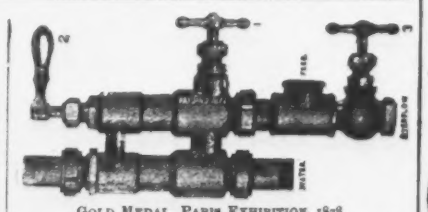
STEAM ENGINES, SAW MILLS AND MINING MACHINERY.

LANE & BODLEY COMPANY, Cincinnati, Ohio.

PITTSBURCH MFG. CO.

Manufacturers of Nail and Spike Machines, Bolts, Nuts, Washers, Rivets, &c. Castings, Forgings and Blacksmith Work promptly attended to.

OFFICE & WORKS, Railroad St., near 28th., Pittsburgh, Pa.



GOLD MEDAL, PARIS EXHIBITION, 1878.

THE HANCOCK INSPIRATOR,

New Combined Pump and Injector.

Eclipses all other appliances hitherto introduced for feeding Steam Boilers. A Portable Boiler is not perfect without one. It lifts its water 25 feet with a low steam pressure, and puts it directly into the Boiler. No adjustment necessary for varying steam pressures.

G. W. STORER, General Agent, 140 N. 3d st., Phila.

STEAM PUMPS

Manufactured by

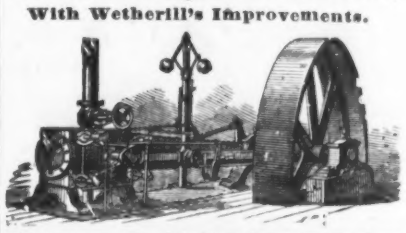
Crane Bros. Mfg. Co.,

CHICAGO.

Machinery, &c.

Corliss Engine Builders,

With Wetherill's Improvements.



Engineers, Machinists, Iron Founders and Boiler Makers.

ROBT. WETHERILL & CO. Chester, Pa.

Box's Patent Portable Double Screw Hoist.

With New Patent Self-Adjusting Chain Guide.

FIRST PREMIUM WHEREVER EXHIBITED.
Philadelphia, 1879; St. Louis, 1879

Always Reliable.

Is stronger, better made, will lift more, raises faster, works easier, and lasts longer than any other hoist in existence. Can be used in any position, even inverted. Single lifting chain that cannot slip, or leave the wheel when moving from place to place. Chain guide that will allow the operator to pull at angle of 45 degrees, and yet keep the same quantity of chain at all times on the wheel.

The Perfection of Hoisting Machines.

Manufactured in sizes from 500 lbs. to 20 tons.

Send for circular.

ALFRED BOX & CO.,

Northern Liberty Works,

312 & 314 Green Street, Philadelphia, Pa.

Also, Box's Patent Radial Drills, full line of Machinists' Tools, Drills, Engines, Shafting, Hangers, Pulleys, Hoists, Elevators, &c.

Established 1867.

Edwin Harrington & Son

MANUFACTURERS OF

PATENT EXTENSION, SCREW CUTTING GAP and TERRET

LATHES,

Iron Planers,

BORING MILLS,

Radial, Upright, Suspension Multiple, Lever, Carriage Makers' Blacksmiths' Hand and Power Post

DRILLS,

and a variety of other MACHINISTS' TOOLS.

Patent

Double Chain Screw Pulley Blocks,

unrivalled for *Durability, Safety* and *Power.*

Patent Double Chain Quick-Lift Hoists,

with Brake for quick and easy lowering.

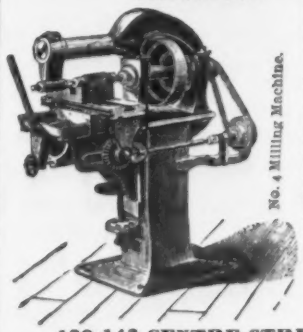
Circulars furnished.

WORKS AND OFFICE,

Cor. N. 15th and Penna. Ave., Philadelphia, Pa., U.S.A

E. E. GARVIN & CO.,

Manufacturers of



No. 4 Milling Machine.

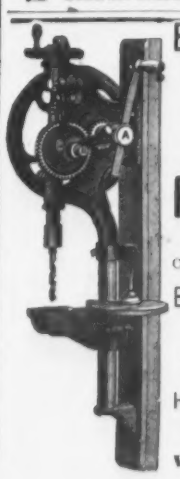
Hand Lathes, Tapping Machines, Cutter Grinders and Wood Planers. Milling Cutters, all shapes and sizes. Gear Cutting and Milling in all its branches.

Milling Machines, Drill Presses,

139-143 CENTRE STREET, NEW YORK.

Corneli's Building,

☞ Send for Illustrated Catalogue.



BOYNTON & PLUMMER,

Manufacturers of

IMPROVED Patent Drills,

Adapted to Blacksmiths' and Carriage Makers' use.

Bolt Cutters and Tire Benders.

From New and Improved Patterns. Also,

Hand and Power Shapers,

54 Hermon Street,

WORCHSTER, MASS.